Anime Studio Debut 6 Users Manual

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Welcome

Introduction

Anime Studio is a complete animation system for creating 2D anime and cartoons. This document is the user's manual, containing useful information to get you started, as well as a detailed reference to all of Anime Studio's features.

If you're just getting started using Anime Studio, the best place to begin is with the "Anime Studio Tutorials" on page 10. This section will give you a quick overview of how Anime Studio works, and what you can do with it. Even if you've used Anime Studio in the past, you might want to give the tutorials a quick read to see what's changed in this version.

If you've been using Anime Studio for a while now, and you want more information on some specific feature or interface element, choose the section that interests you from the table of contents. The "Using Anime Studio" section describes how to perform the basic tasks of working in Anime Studio, while "Interface Reference" goes into detail about what every menu item and button in Anime Studio is used for.

Finally, if you're having a problem that just isn't answered in this document, please see "Technical Support: Where to Go When You Need Help" on page 215. We want to do everything we can to make using Anime Studio a fun and productive experience.

Demo Limitations

If you haven't purchased a copy of Anime Studio, then the program will be running in "demo" mode. While in demo mode, Anime Studio still allows you access to all features of the program. Anything you can do in the full version you can do in the demo. Also, any files you create with the demo version of Anime Studio will still work fine if you purchase the full version.

The demo version has just three limitations: First, you can only run the demo version of Anime Studio for 30 days. Second, you cannot import any external file formats including images and movies. Third, you cannot export your animations to other formats (QuickTime, AVI, Flash, etc.).

To purchase Anime Studio, click here.

What's New: New Features in Anime Studio 6

The following is not a comprehensive list of new features, but it covers most of the major changes in version 6 that might be of interest to experienced Anime Studio users.

User Interface

- New presets for document resolution. Debut is limited to 788x768.
- New UI colors
- Dockable windows, and resizable while docked
- Tool consolidation
- Add checkbox to doc window to turn on/off Construction Curves

- Space bar pans canvas
- No more separation between default and current color style
- Mini Style window (with an option to switch to "advanced" mode)
- Layer properties pop up is in layers on each layer
- Dialogs remember where they were placed and open in the same location
- Hot keys and menu items to Hide a shape, and Show All shapes. All hidden shapes are shown upon opening a file.
- New default color palette
- When picking a color from the palette, preserve the existing alpha value
- New library
- Reorder Multiple Layers
- Translate multiple layers
- Copy and paste bones across layers
- Improved quality for on-canvas image layers. Better Alpha blending
- Animated layer effects must now be turned on manually
- Animatable shape effects on styles palette

Scripting

- Upgraded to Lua 5.1
- Script writers need to use ipairs() function
- Exposed some more functions to scripting

Tool Improvements

- New Scatter Brush
- Eye Dropper tool- now picks fill and stroke off of any object on any layer.
- Some fill effects (gradient and image texture) can now be placed precisely on a shape using the Select Shape tool
- Color .png brush support
- Maximum brush width increased to 256
- A more hand-drawn line effect , accessible through the layers tab or scripts
- Improvements to Gradient fill effect: Dragging sliders, setup multiple colors to create complex gradients. Gradients are animated now.
- Some fill and line effects can display on-canvas, such as Gradient, images textures and shaded.
- Image Texture fill effect conforms better to bone warping and layer

transforms

- Removed obsolete fill and line effects

Audio and Video

- Anime Studio Debut: Sequencer with 2 Audio Tracks, 1 Video Track
- Anime Studio Pro: Sequencer with Multiple Audio Tracks and Multiple Video Tracks
- Audio Panning
- HD Video Import; HD Video Export in Anime Studio Pro Only
- Video support improved: Footage is reinterpreted during import, and audio is imported.
- Movies may be opened directly in Anime Studio, with proper dimensions, duration, and frame rate. Good for doing tracking right away, or for working on a video composite project
- Video Features Tracking, allowing you to track bones (base, tip, or both)

Animation

- Non-Linear Animation
- Scale keyframes: Select keys, **Alt+Click** and drag on timeline to rescale
- Timeline channels only show when they are actually used
- Right-drag in the time ruler to edit timing offsets
- Onion skins need to be manually enabled - helps avoid doing it accidentally
- In timeline, minimize how much it automatically scrolls to the current frame
- Timeline buttons to navigate to previous/next keyframe
- Default interpolation is now set in the main Preferences dialog
- Preference to show all animation channels consolidated into one
- Animated layer effects must now be turned on manually
- When rendering the current frame, saving as PNG saves an alpha channel

Lip Sync

- Integrated LipSync
- AST production sync lib in Pro Only
- Debut version uses amplitude only.
- PapaGayo can still be used as always.

Morph Targets

- Pro can be used to create morph targets
- Debut can use and blend morph targets, but has no setup tools.

Import and Export

- Upload to Youtube
- Improved Illustrator import --Now the paths are parsed much better and match what is in illustrator.
- Fixed a problem with darkened (or lightened) transparent edges on PNG files

Motion Tracking

- Debut can track 3 points
- Pro can track unlimited points

Rendering

- 2D Screen Space Ambient Occlusion

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Anime Studio Tutorials

In this section, we will walk you through various aspects of using Anime Studio. This is the perfect place to start if you've never used Anime Studio before. Even if you're an experienced Anime Studio user, this version of Anime Studio has some big changes, so we recommend reading through the tutorials again.

The best way to get started is to read all the tutorials in the Basics section in order. Each of these tutorials builds on skills learned in the earlier ones, and one-by-one will get you up to speed with Anime Studio's basic drawing and animation techniques. Once you're comfortable working in Anime Studio, then you can move on to the other tutorial sections. You don't have to read them all (although that probably wouldn't hurt), but choose the ones that address the specific techniques you want to learn about.

Finally, all of the Anime Studio files created or used by the tutorials have been installed along with Anime Studio itself. You can find them by going to the Anime Studio program folder, and looking for the Tutorials sub-folder. If you're having trouble with a tutorial, try opening the corresponding Anime Studio file to see what it should look like.

Once you've finished the tutorials, you should be comfortable enough to continue on your own. However, the tutorials won't teach you how to use every feature of Anime Studio - the rest of this manual is a reference that covers Anime Studio's features in detail, and is recommended reading to be able to use the full power of Anime Studio.

Drawing

Tutorial 2.1: Welding

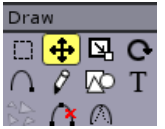
As you learned in the Quick Start tutorials, Anime Studio features an Auto Weld feature that automatically welds shapes and segments together when your cursor reaches a point that you can weld to. However, there are cases where you may want to manually weld points together.

When drawing in Anime Studio's vector layers, the concept of "welding" points is very important. These tutorials will show you examples of how (and why) points can be welded, and will go on to show you some examples of good and bad welds you can do in Anime Studio.

When you weld two points together in Anime Studio, Anime Studio really is combining those two points into one. There are a couple reasons to do this: First, welding the two endpoints of a curve together creates a closed curve. Second, if two shapes join up at a particular point, and you want them to remain joined during an animation, then welding those points together will guarantee that those two shapes will remain joined.

How to Weld Points

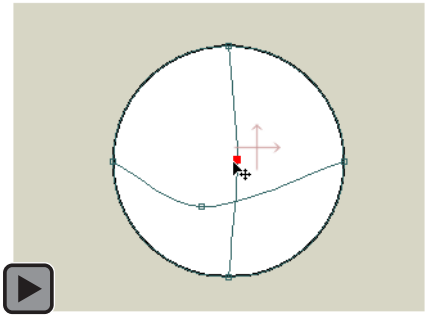
There are two ways to weld points in Anime Studio: manually and automatically. To manually weld two points together with the **Translate Points** tool, first uncheck the Auto-weld option for the tool.



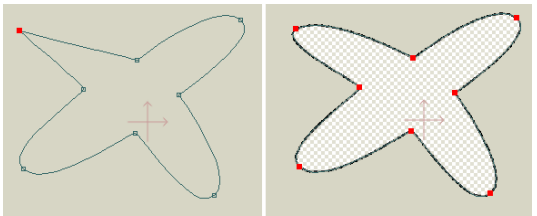
Translate Points

Auto-weld option unchecked.

Drag one point on top of the other and press the spacebar. Here's an example of this method. Although you can't see the keyboard in the example, keep in mind that the spacebar was pressed at the moment when the two points overlap. After welding, notice how the two points move as one.



Welding Example 1. (SWF File)



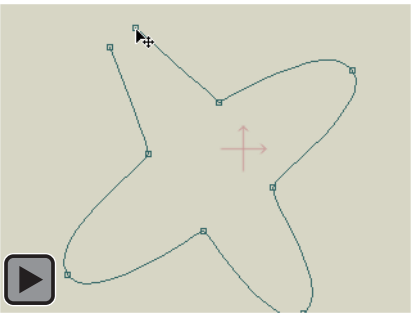
Before spacebar is pressed (left). After spacebar is pressed (right).

The second method of welding is automatic. For automatic welding to work, be sure that the "Auto-weld" checkbox is turned on in the tool options area when the Translate Points tool is active:

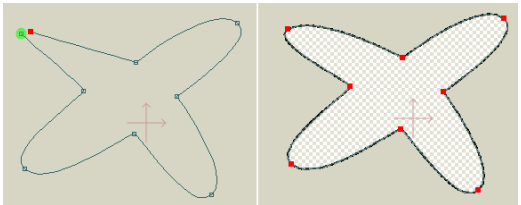
Make sure Auto-weld is on.

Using this method, when you drag a curve endpoint on top of another point , the point turns green when it can be welded automatically. Let go of the mouse to automatically weld the points together.

Here's an example of automatic welding. In this case, the spacebar was not pressed to initiate the weld - as soon as the mouse is released, the two overlapping points are automatically welded together.

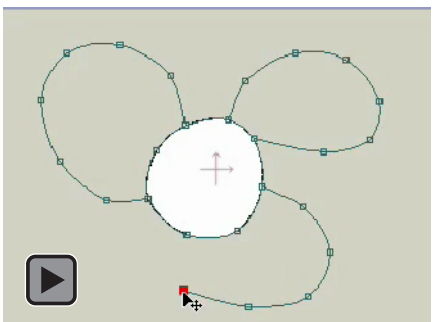


Welding Example 2. (SWF File)



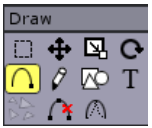
Automatic welding.

Here's another example of automatic welding. Remember that only a curve endpoint can be automatically welded. However, the point that it is welded to does not need to be an endpoint:



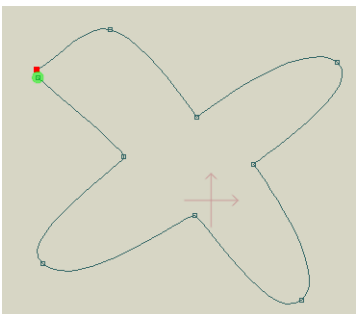
Welding Example 3. (SWF File)

Automatic welding also works with the **Add Point** tool.



Add Point

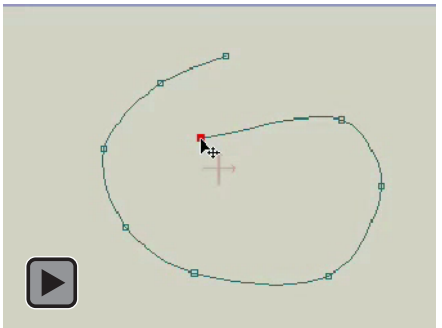
When you add a new point, you can drag it around as if you were using the Translate Points tool. As long as the new point you added is a curve endpoint, it can be automatically welded to another point. If the new point is not an endpoint, you can still weld it to another point manually by pressing the spacebar when it overlaps another point.



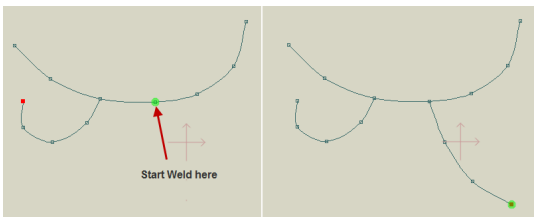
Add Point tool with Auto-weld option on

Besides welding two points together, Anime Studio can weld a point

to the middle of a curve segment. This can be done with either the automatic or manual welding methods. Here's an example:



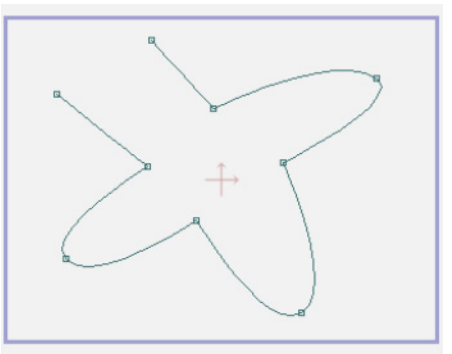
Welding Example 4. (SWF File)



Welding to a curve segment.

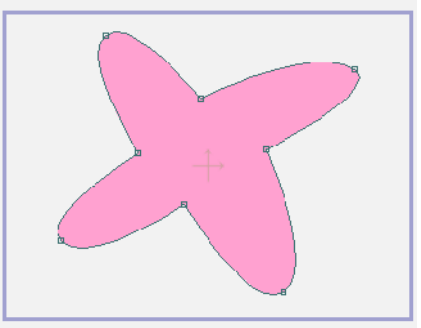
Why to Weld Points

OK, so that covers welding points, but why do you want to weld points again? Well, the main reason is to create fillable shapes. In order to fill a shape with color, that shape needs to be completely closed. This is only possible if you weld some points together. The following shape cannot be filled with color because it is not closed:

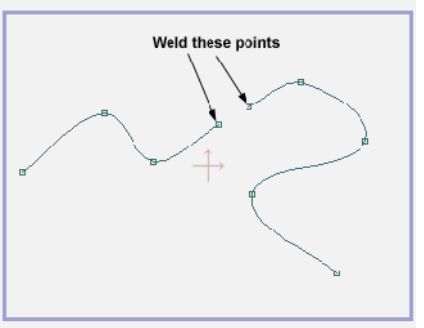


A non-closed shape.

By welding the two endpoints together, we can create a closed shape that can then be filled:



A closed shape that can be filled.

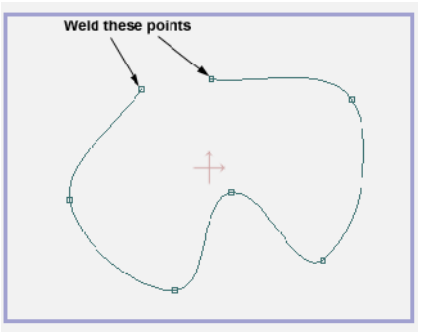


Joining two curves.

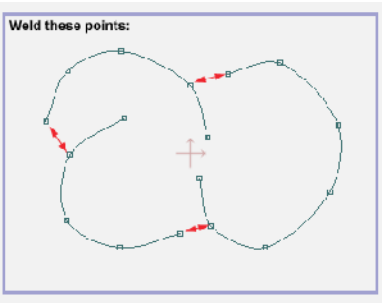
Examples of Good Welding

Let's look at some examples of good welding choices. First, the following two points could be welded to create a single, continuous curve:

The next case shows the classic case of welding a curve closed to create a fillable shape:

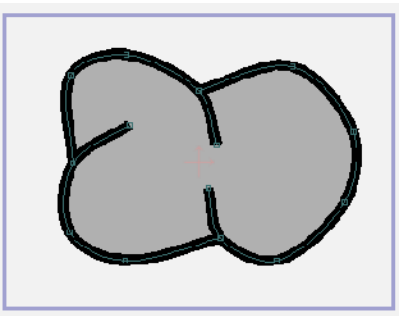


Closing a curve.



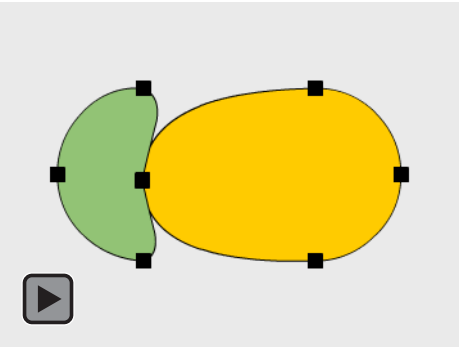
Joining multiple curves into a single closed shape.

Next, we show a shape made up of several curves. Notice that a closed, fillable shape does not need to be made up of a single curve. The shape below, after welding, is made up of three curve segments, but is still closed and can be filled with color:



The welded and filled shape.

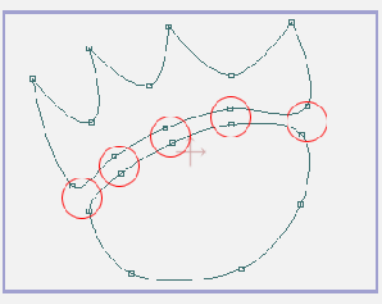
Finally, the example below shows two circles lined up side-by-side. The two side points of the circles have been welded together so that when they move around during an animation they remain joined. If those points were not welded, moving them in sync like this would require a lot of extra work.



Joined circles (SWF File).

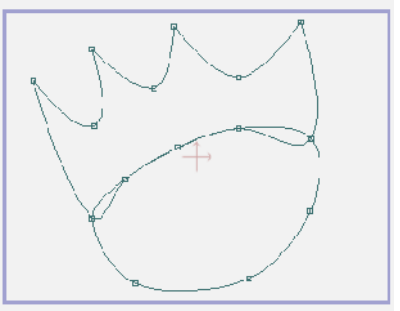
Examples of Bad Welding

Typically, when you weld together two points, one of them should be a curve endpoint. This isn't always true, but most often it is. If you find yourself welding together two points and neither is an endpoint, take a moment to think whether the weld is appropriate. Here's an example of a bad choice of welding. Suppose you had the following two shapes and you were considering welding the pairs of circled points:



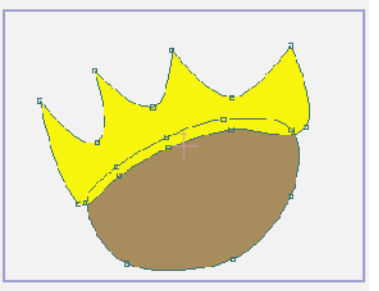
Before welding the marked points.

Although Anime Studio will let you perform those welds, it isn't really a good idea. What you would end up creating is a shape with lots of little holes in it. Along the section of curves that you welded together are little bubbles that make it impossible to fill the two main shapes:

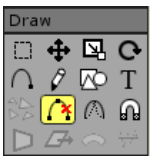


Bad welding.

Instead, a better approach is to just move the two shapes closer together without any welding at all. In this case, welding the two shapes together doesn't have any benefit.

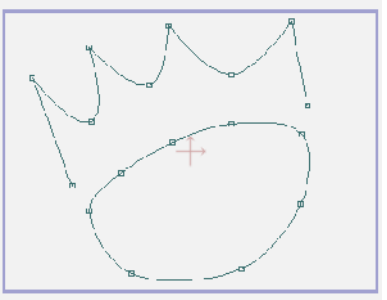


Fill the shapes without welding them together.

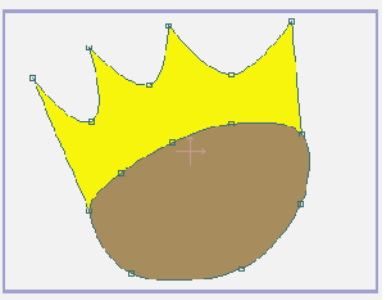


Delete Edge

Another approach in this situation would be to cut the top shape apart with the **Delete Edge** tool and then weld the remaining endpoints to the lower shape. First, cut the top shape apart:



Cut the redundant curve away.



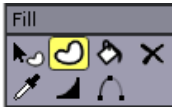
Weld the new endpoints.

Then, weld the newly-created endpoints onto the lower shape. With this approach you don't end up with a double curve all welded together. The resulting shape is much cleaner and easier to work with:

Tutorial 2.2: Drawing Shapes with Holes

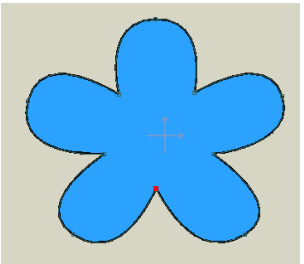
Drawing shapes with holes is very easy in Anime Studio, but many new users don't realize that this can be done. There's really no trick at all - just follow the basic rules for creating a fill.

Reminder of Fill Rules



Create Shape

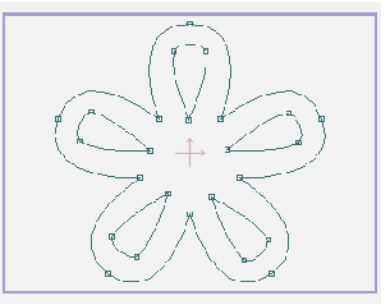
As a reminder, let's consider the rules for creating a fill shape: A fill must be composed of closed curves that define the border of the shape. So, as an example, below is a valid fill shape.



A basic fill shape.

Creating Holes

So a fill shape is defined by the curves on its border. If we want to create a hole, then all we need to do is create curves that outline the shape of the desired hole(s). Below we've added some extra curves before creating a fill shape:

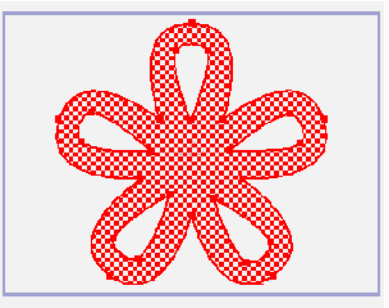


New curves added.

Create Shape

Once you've set up curves to define the shape of the hole, all you need to do is select the outline and the hole(s) using the **Create Shape** tool.

Notice that Anime Studio automatically identifies the inner curves as borders of holes in the shape. There's nothing in particular you have to do, just draw the holes and Anime Studio will know what to do with them. When you've selected all the correct points, press the spacebar to finalize the shape.



Selected points for filling.

Finally, here is the resulting shape. (The Line Width tool was used to narrow the width of the outline at the corner points.)

The finished shape.

Here's another example of a shape with a hole:

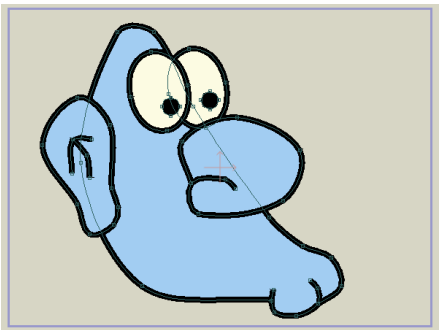
Another shape with a hole.

Tutorial 2.3: Hidden Edges

When drawing more complex objects like faces, you will often run into situations where you want an outline to only go ***partway*** around a shape. There's an easy way to accomplish this in Anime Studio.

Start With a Sample File

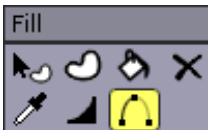
For this tutorial, we'll start with a project file that's almost finished. It's named "Tutorial 2.3" and it's located in the "Tutorials/2 - Draw" subfolder within the main Anime Studio folder. Open this file in Anime Studio and you should see something like this:



Starting point for this tutorial.

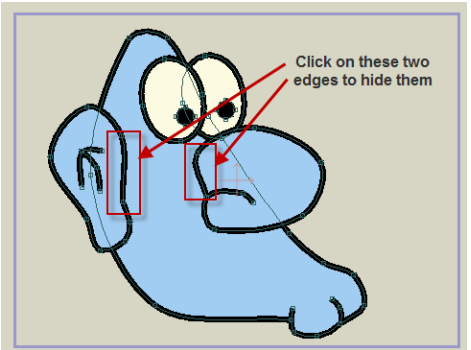
Hidden Edges

The drawing we're working with could be the beginning of a character's face. In this face, the nose and ear are separate shapes from the main head outline. The general shape looks OK, but where the separate parts join up we don't want to have lines separating them. To fix this, activate the **Hide Edge** tool.



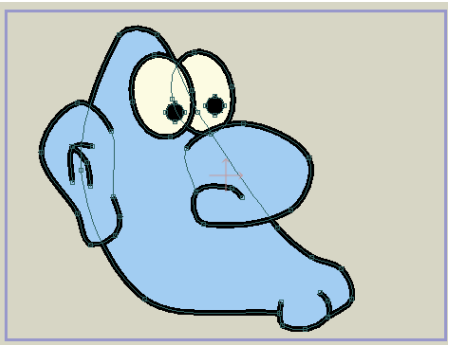
Hide Edge

There are two edges we want to eliminate from this drawing. Click on these two edges as shown below. If you don't see an immediate result, try dragging the mouse across the lines in question to make sure you hit them.



Edges to click on.

After clicking on these edges, they should disappear from view, and the result should be as follows:



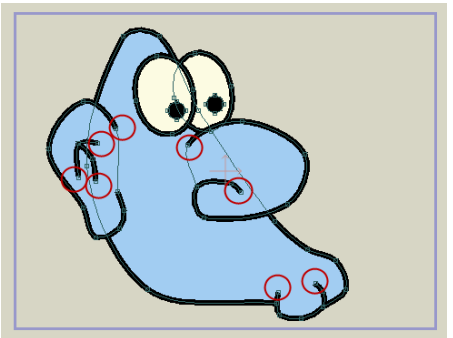
After hiding the edges.

The Hide Edge tool works by simply hiding the selected edges of an outline. It does not affect the underlying curve - the curve is still there, you just can't see the outline on that particular section of the curve. Because it works on the outline, and not the curve itself, be sure you only use the Hide Edge tool ***after*** you've created the outlines. Otherwise, with no outline, you would not see the result of hiding some edges.

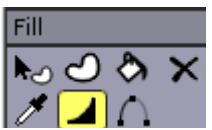
The other thing to know about the Hide Edge tool is that you can also un-hide edges. If you change your mind, or hide the wrong edges, just click on a hidden edge to re-show it.

Finishing Touches

If you hide the edges of a thicker line, you'll often end up with abrupt ends to the outline. You can see this below:

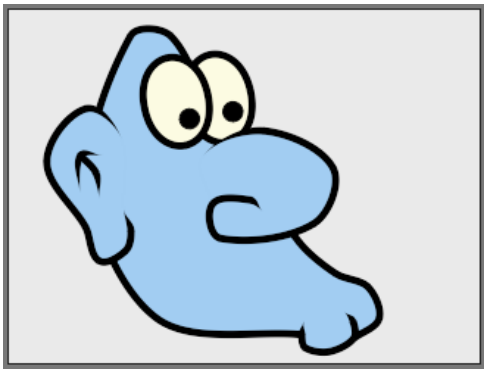


Blocky curve ends.



Line Width

A nice way to finish off these endpoints is to use the **Line Width** tool. With this tool, click on the endpoints to set their width to 0. You can also click and drag to adjust the width of any other points you choose. After cleaning up the endpoints, you should get a result like this:



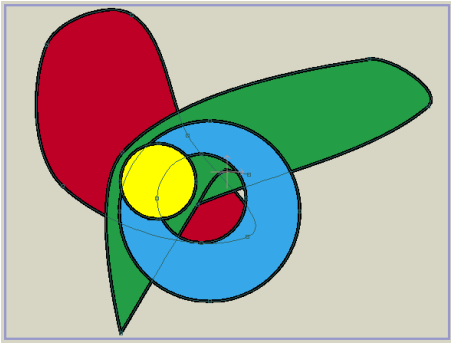
Tapered endpoints.

Tutorial 2.4: Shape Ordering

In an Anime Studio vector layer, shapes are ordered from back to front. This ordering determines which shapes will appear in front of or behind others. This tutorial will show you how to work with shape ordering.

Start With a Sample File

For this tutorial, we'll start with a project file that's almost finished. It's named "Tutorial 2.4" and it's located in the "Tutorials/2 - Draw" subfolder within the main Anime Studio folder. Open this file in Anime Studio, and you should see something like this:



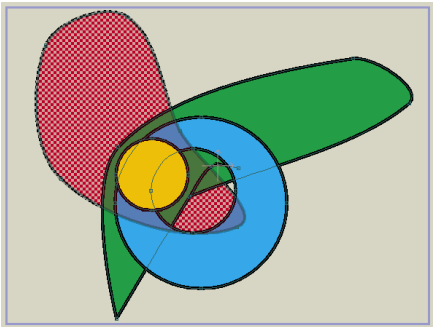
Starting point for this tutorial.

As you can see, there are four shapes in this file. By the way they overlap one another, you can also tell their ordering. From back to front, there is a red shape, a green shape, a blue shape, and a yellow circle.

Raising and Lowering Shapes

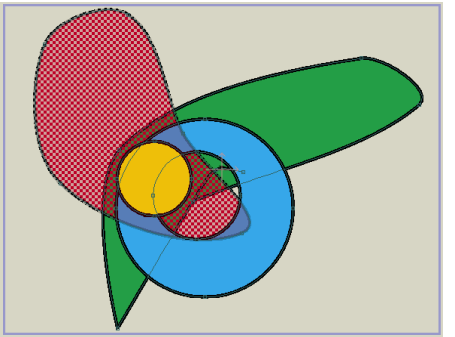
Select Shape tool.

If you want to change the order of some shapes, the first thing you need to do is select a shape to work with. Using the **Select Shape** tool, click anywhere on the red shape. It will become highlighted with a checkerboard to indicate that it is selected. Notice that you can also see it faintly beneath the other shapes - this is so that you can see the entire selected shape, even if it is normally obscured by other shapes.



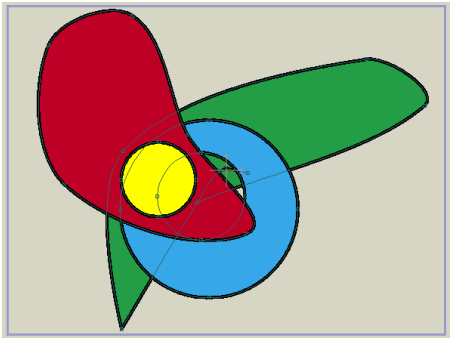
Selected shape highlighted.

To raise the shape, press the Up arrow key on your keyboard. Notice that the red shape has now moved one step up in the layer order, above the green shape:



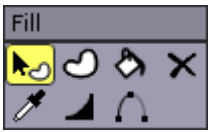
Raised shape.

Right now, press the enter key to de-select all objects in the layer. The red shape will switch back to normal to indicate that it is not selected:



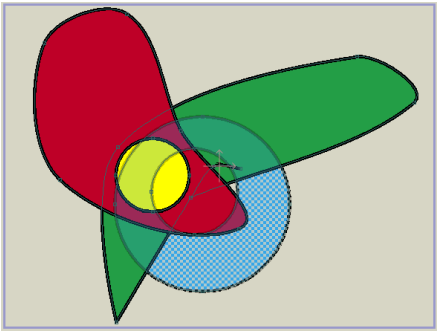
De-select the shape.

Next, use the **Select Shape** tool and click on the blue shape to select it.



Select Shape tool.

Press the Down-arrow key twice to lower the blue shape below the red shape, and then below the green shape:

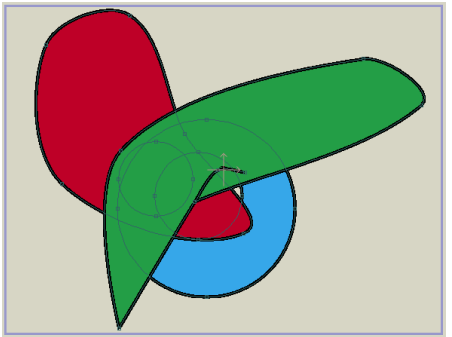


Lowered blue shape.

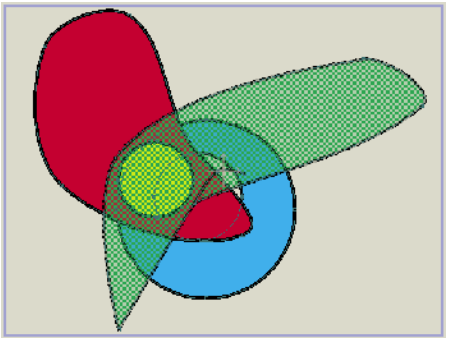
You can also raise a shape to the top (above all others in that layer) or lower it to the bottom (behind all others in that layer). Select the green shape and hold down the **Shift** key while pressing the Up-arrow key. With a single key press, the green shape moves all the way to the top of the layer's shape order.

Selecting Hidden Shapes

If you now press the enter key, the green shape will be de-selected. Notice that at this point the yellow circle is behind the green shape, and can't be seen. You can still see the curves that make up the yellow circle, but the shape itself, being behind the green shape, is not visible:



Hidden yellow circle.



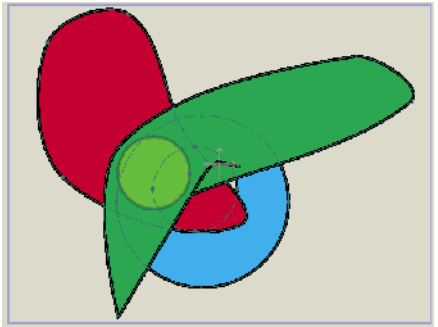
Selected green shape.

Now we want to bring the yellow circle back to the front. Using the **Select Shape** tool, click on the yellow circle, even though it's hidden.

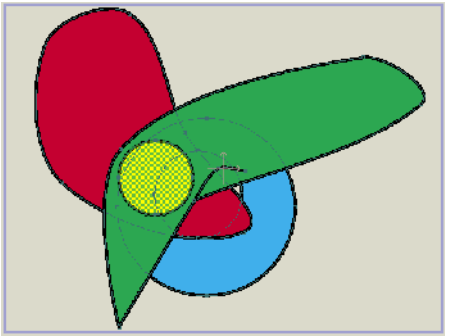
Select Shape tool.

As you may have expected, the green shape gets selected because it is in front:

Now comes the trick for selecting shapes lower in the ordering. Hold down the **Ctrl** key while pressing the down-arrow key. This tells Anime Studio to pick the next deeper shape in the layer ordering at the same point you just clicked. The yellow circle will now be selected. It will be kind of faint to remind you that it is actually behind other shapes in the layer:



Selected yellow circle.



Raised yellow circle.

Finally, hold down the **Shift** key while pressing the up-arrow to bring the yellow circle all the way to the top of the layer ordering, making it fully visible once again:

Tutorial 2.6: Layer Masking

This tutorial is more of a show & tell than a hands-on creation of an animation. We will demonstrate some examples of a powerful feature of Anime Studio - layer masking. Layer masking can be used for all kinds of effects such as shadows, compositing, depth effects, transitions, and to simplify certain modeling and animation tasks.

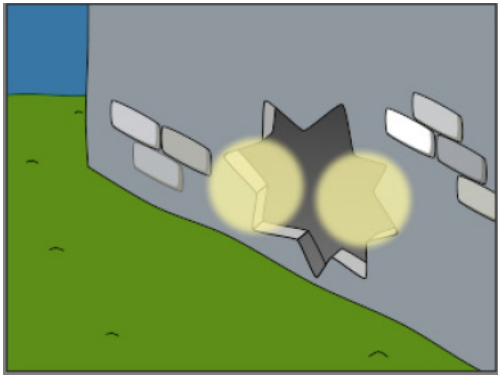
Start With a Sample File

For this tutorial, we'll start with a project file that's almost finished. It's named "Tutorial 2.6" and it's located in the "Tutorials/2 - Drawing"

subfolder within the main Anime Studio folder. Open this file in Anime Studio, expand the "Masking Group" layer in the Layers window, and you should see something like this:

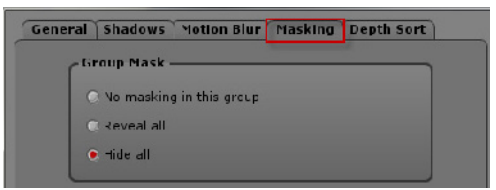
Starting point for this tutorial.

This is a simple scene of a wall with a hole broken through it (a jailbreak maybe?). Set the current time to frame 24, and choose the **File > Preview** menu command. Notice how the spotlights spread across the hole as if it were a flat object as shown below:



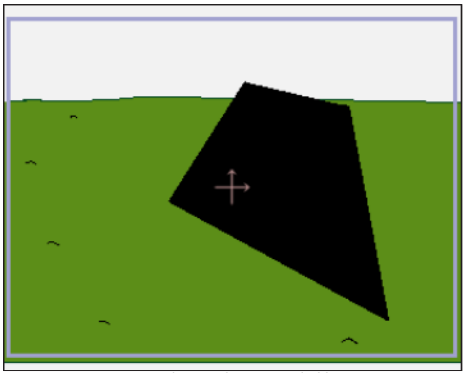
Spotlights shining across the hole.

To make the spotlights more realistic, we can use Anime Studio's masking feature. Double-click the "Masking Group" layer. In the Layer Settings dialog that appears, go to the "Masking" tab and set the "Group Mask" setting to "Hide all" as shown below and click OK.



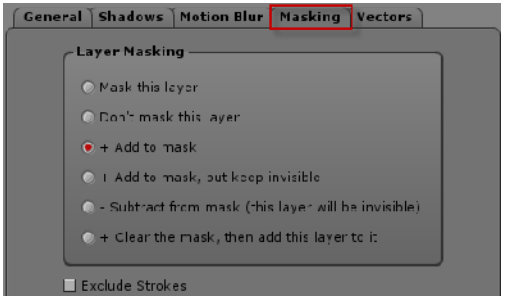
Mask setting for the "Masking Group" layer.

In the editing view, you'll notice that the wall and spotlights have disappeared from view. This is because the masking mode we just set hides all objects in the group - we've got a bit more work to do:



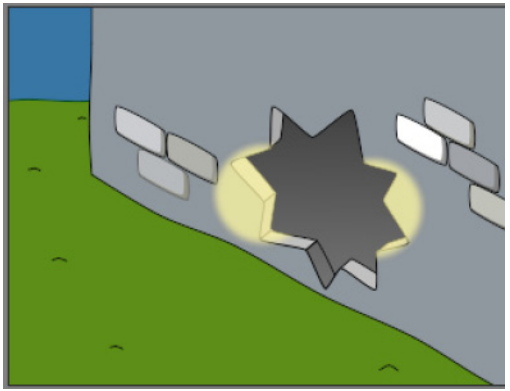
Everything in the group is hidden

The next step is to define which parts we actually want to see. Double-click the "Wall" layer to bring up the Layer Settings dialog. In the Masking tab, set the "Layer masking" value to "+ Add to mask" as shown below and click OK:



Mask setting for the "Wall" layer.

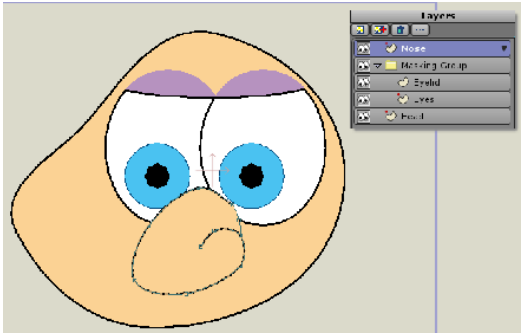
What we've done is tell Anime Studio to add the contents of the Wall layer to the visible region of all objects in the group. No other layers in the same group will be allowed to draw outside this visible region (the mask). If you temporarily turn off the "Background" layer, you'll see that there is an actual hole in the wall. Because the wall acts as a mask, the spotlights cannot draw themselves in this area. You're welcome to render out the entire animation as a QuickTime movie to see the full, animated effect.



The wall acting as a mask.

Another Example - Simplified Modeling

Now open the file "Tutorial 2.6_2". Take a look at the masking group in this project (in this case, the masking function is already turned on). In this example, the eyes are used as a mask, and the eyelids are forced to render themselves only inside the eyes. This makes it much easier to construct and animate the eyelids, without having to worry about them spreading outside the eye region - with a mask layer, they can't.



Another Example - Transition Effect

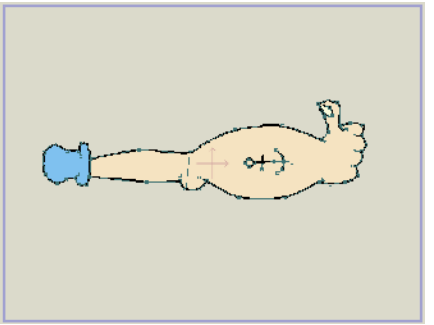
Finally, open the file "Tutorial 2.6_3". This project uses a mask layer to cause a text object to fade into existence. Play back the animation, or export it as a QuickTime movie, then play back the movie. In this example, a variation of the masking feature is used: the mask itself doesn't have to be visible. In this case, the mask is a rectangle that gradually exposes the text, but we don't really want to see the rectangle. To use an invisible mask, the Mask layer uses the "+ Add to mask, but keep invisible" option in the Masking tab.

Masking Example

Bones

Tutorial 3.1: Bone Binding

The purpose of bones in Anime Studio is to provide high-level objects that are easy to manipulate in place of moving around lots of individual points. In order for bones to do their job, vector control points and other objects must first be bound to the bones. There are three ways to bind objects to bones: automatic binding, manual binding, and layer binding. This tutorial will show you the difference between the three.



Starting point for this tutorial.

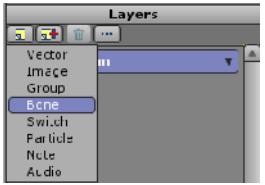
Start With a Sample File

For this tutorial, we'll start with a project file that contains some artwork to get started with. It's named "Tutorial 3.1" and it's located in the "Tutorials/3 - Bones" subfolder within the main Anime Studio folder. Open this file in Anime Studio, and you should see something like this:

Automatic Binding

The most common method of binding objects to bones is also the easiest - automatic bone binding. Whenever you draw new artwork in Anime Studio (or import image files as image layers), those objects are set up for automatic bone binding. All you need to do is add the bones.

In the Layers window, click the New Layer button, and select "Bone" from the popup menu.



Create a new Bone layer.

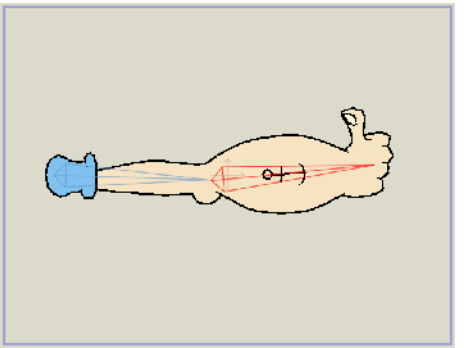
Double-click the new bone layer to bring up the Layer Settings dialog. Name the new layer "Arm Bones" and click OK. Finally, drag the "Arm" vector layer upward to move it into the bone layer:

Arm layer placed inside a bone layer.

Make sure the bone layer is selected, then activate the **Add Bone** tool.

Add Bone

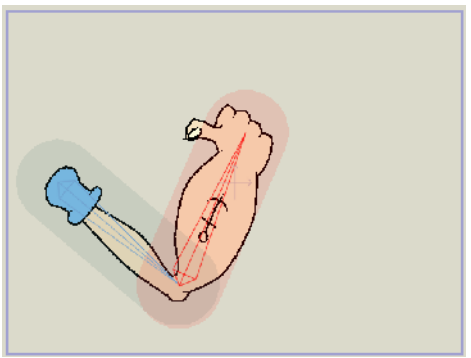
In the main editing view, create two bones: the first one starting at the shoulder and ending at the elbow, and the second starting where the first left off and ending in the hand. And that's all it takes for automatic bone binding.



Create two new bones.

Use the **Manipulate Bones** tool to try moving the bones around. The arm will move with the bones automatically, since it was, well, automatically bound to them.

Manipulate Bones



Test moving the bones.

This arm setup works pretty well as it is, but let's try to refine it a bit.

Bones

Double-click the bone layer to bring up the Layer Settings dialog. Go to the Bones tab, set the binding mode to "Region binding", and click OK:

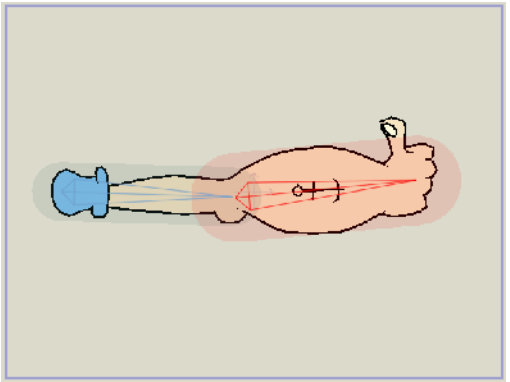
Turn on region binding.

Flexible binding (the default for new bone layers) uses a method of bone binding where every bone has some influence over every point in a vector layer. The farther away a point is from a bone, the less influence that bone has over the point. However, you can still experience some rubbery movement where a moving arm can cause a toe to twitch a little bit.

With region binding, on the other hand, every bone has a cutoff radius, outside of which it will not affect the movement of vector points. This can be used for cleaner movement, but requires a little extra setup. Now that region binding is in effect, activate the **Bone Strength** tool.

Bone Strength

Around each bone you will see its region of influence. Vector points are controlled by the bone(s) whose regions overlap them. If a vector point is not within any region of influence, it will move with the closest bone. Using the Bone Strength tool, click and drag on each of the bones to resize its region of influence. The idea is to make the regions just large enough to contain the body part that the bone is meant to control:



Resized regions of influence.

Don't worry about the parts of the forearm that are outside the forearm bone's region of influence - they will just move with the closest bone, which is in fact the forearm.

Use the **Manipulate Bones** tool again to try moving the arm. The movement should be a little cleaner than it was with flexible binding.

Manipulate Bones

Select Bone

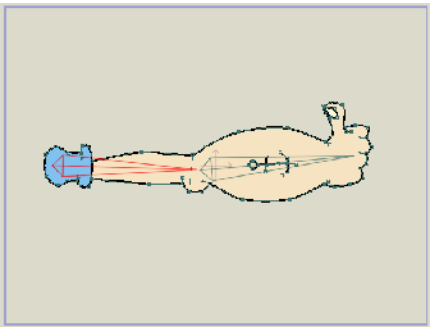
Manual Binding

Manually binding points to bones is a process that exists mostly for compatibility with older versions of Anime Studio. Automatic binding, combined with bone regions of influence is the easiest way to work with bones in Anime Studio. However, there may be some times where you want more control over exactly which bones control which points.

To manually bind the arm points to bones, first select the Arm vector layer.

Arm Vector Layer

Then, use the **Select Bone** tool to select the upper arm bone:



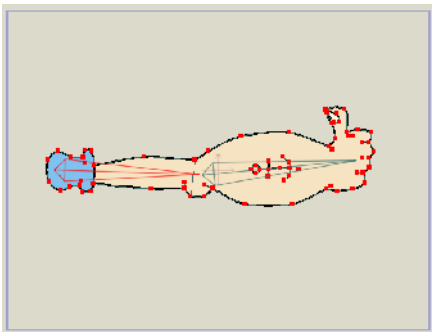
Select the upper arm.

Next, activate the **Bind Points** tool.

Bones

Bind Points

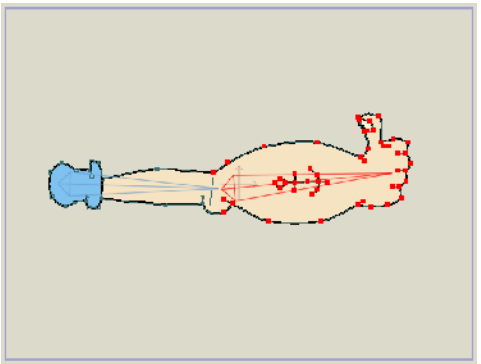
Drag a rectangle around all the points in the arm to select them. Press the spacebar to bind the selected points to the selected bone:



Bind all points to the upper arm.

With the Bind Points tool still active, hold down the **Alt** key and click on the lower arm bone to select it. When you select the lower arm bone, notice that no points are selected. When you select a bone, the points that are bound to it also get selected - in this case, no points are bound to the lower arm bone.

Next, drag a selection rectangle around the points in the lower part of the arm, as shown below. Press the spacebar to bind the selected points to the selected bone:



Select the lower arm bones.

You're done - you have manually bound points to both bones in the arm. Now test it out with the **Manipulate Bones** tool.

Manipulate Bones

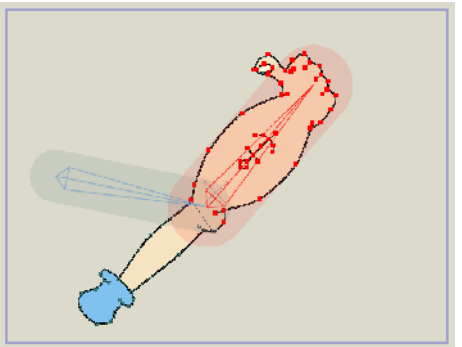
Although this method does work for binding points to bones, we don't really recommend it unless you have a special need to bind specific points to specific bones. You may have noticed that the arm doesn't move so smoothly with manual point binding. This is because the points around the elbow only move with one bone or the other, and so stretch apart and get distorted. With automatic binding, on the other hand, the points around the elbow move under the influence of both bones, and so move more smoothly.

Manual point binding can also be very labor-intensive, especially when your artwork has lots of control points. Finally, automatic bone binding can be used to warp image layers, while manual binding can't - another reason to stick with automatic bone binding (using either flexible or region binding mode).

Layer Binding

The last way to bind an object to a bone is to bind an entire layer to a single arm. Make sure the Arm vector layer is still selected and activate the **Bind Layer** tool.

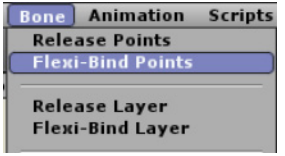
Click on the lower arm bone to bind the entire Arm layer to the lower arm bone.



Bind the Arm layer to the lower arm bone.

Use the **Manipulate Bones** tool to try moving the bones around. Notice that the entire arm moves rigidly with the lower arm bone - the entire layer is bound to that one bone. This isn't very useful for this particular arm, but binding a layer to a bone is useful when you want to attach an object to a character. For example, a switch group containing multiple mouth shapes can be attached to a bone in the head. Or, if you want to make a character hold an object in its hand, you might bind that object to the character's hand bone.

Manipulate Bones



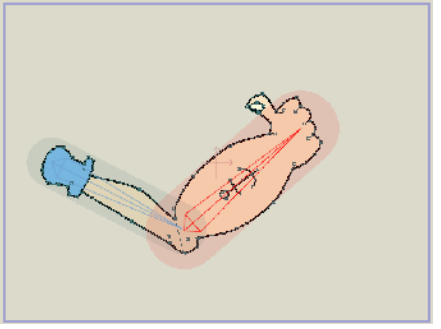
Use the Manipulate Bones tool if you wish to confirm that the points are automatically bound again.

Go Back to Automatic Mode

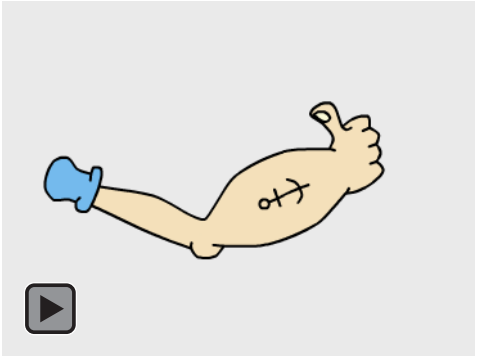
Let's undo all of this extra binding and go back to automatic mode. With the **Bind Layer** tool, click on some empty space in the editing view - this tells Anime Studio to not bind the layer to any bone.

Bind Layer

Next, select the **Edit > Select All** menu command to select all the vector points. Finally, choose the **Bone > Flexi-Bind Points** menu command to flexibly bind the points, as they were at the very beginning.



The arm under bone control.



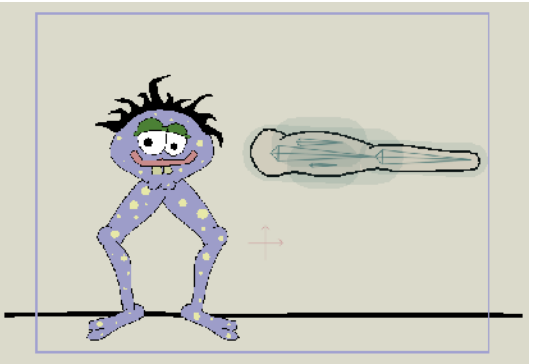
The final result. (SWF File)

Tutorial 3.2: Bone Constraints

This tutorial demonstrates Anime Studio's bone constraint features. Bone constraints allow you to define limits on the way bones can move, simplifying your animation work. When used carefully, bone constraints can let the bone structures do some of the work for you.

Start With a Sample File

For this tutorial, we'll start with a project file that's almost finished. It's named "Tutorial 3.2" and it's located in the "Tutorials/3 - Bones" subfolder within the main Anime Studio folder. Open this file in Anime Studio, and you should see something like this:



Starting point for this tutorial.

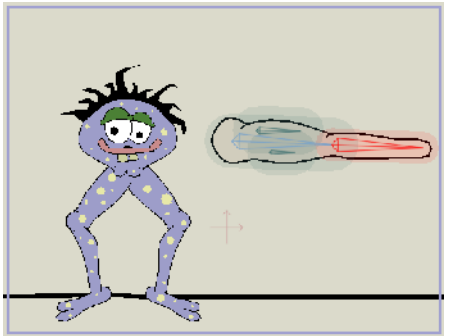
This file contains two skeleton layers that have no constraints set up. We're going to add constraints to these skeletons to show how useful they can be.

Angle Constraints

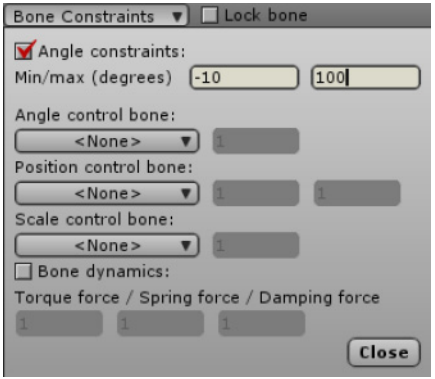
The first type of bone constraint is angle limits. By limiting the angle that a bone can rotate, you can prevent arms and legs from bending backwards. Make sure the Arm layer is selected, and then use the **Select Bone** tool to select the bone in the Arm as shown below:

Select Bone

Select the Arm bone.



When the Select Bone tool is active, the Bone Constraints popup box will be available in the tool options area of the main Anime Studio window. Click the Bone Constraints popup to open it, and adjust the settings as shown below. Specifically, turn on the "Angle constraints" checkbox, and set the min/max angle fields to -10 and 100.



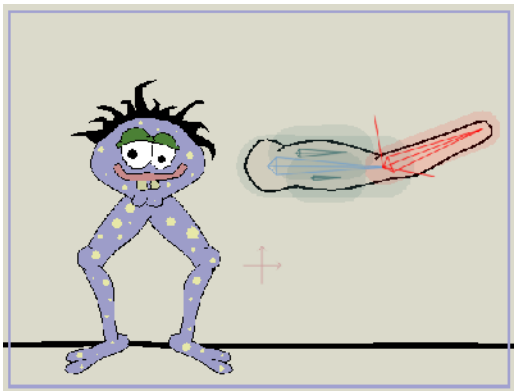
Set angle constraints.

Click the Close button to close the constraints popup box. Then, set the bone's name to "Forearm" - we'll see why later.

Name this bone "Forearm."

Once you've set up angle constraints, you can see them in the working area as two lines around the bone that indicate the minimum and maximum angles the bone is allowed to rotate between. Try using the **Manipulate Bones** tool and move the forearm - notice how Anime Studio doesn't allow you to move the bone beyond the minimum and maximum angles you set up.

Manipulate Bones



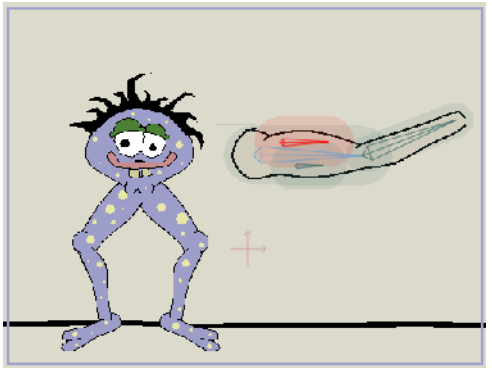
Visual display of angle constraints.

Tip: Here's a handy little trick. Often, it can be hard to judge the correct

numerical angles for bone constraints. There's an easy way to adjust them if you have a mouse with a scroll wheel. Hold the mouse over the angle constraint you wish to change (in the Bone Constraints popup), and roll the mouse wheel up and down. The angle will change, and the display in the editing view will update to match. With this method, you can watch the display in the editing view and not worry so much about the actual numerical value.

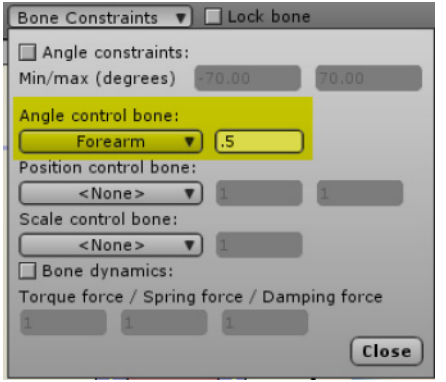
Control Bones

The next type of bone constraint allows one bone to control the motion of another. This is a way to set up simple "automatic" animation. Select the small bone above the upper arm:



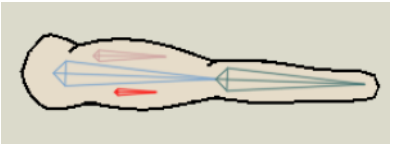
Selected bone.

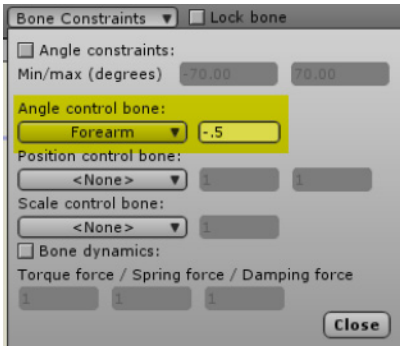
Bring up the Bone Constraints popup again, and select "Forearm" from the "Angle control bone" popup menu (this is why we named it earlier), and enter the value 0.5 in the angle control field as shown below:



Angle control setup.

We'll do something similar for the small bone below the upper arm. Select that bone, and set "Forearm" as the angle control bone, but this time set the angle control value to -0.5.





Finally, use the **Manipulate Bones** tool again to move the forearm. Notice that now the muscles in the upper arm move automatically - this is what the Angle Control Bone does - it tells other bones to move automatically when it moves.

Manipulate Bones

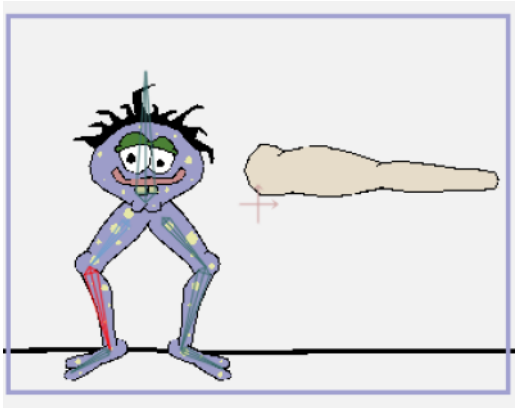
Upper Arm bones move automatically.

Bone Locking

The third category of bone constraint is "bone locking". When you lock a bone, you're telling Anime Studio that you don't want it to move. Anime Studio will try to keep the bone still by moving its parents as necessary to keep the bone in place. This isn't always possible (depending on what else is happening in the animation), but it is still an extremely useful feature.

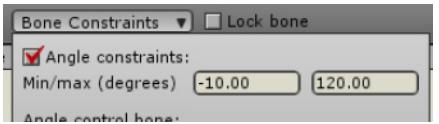
Select the "Frank w/Skeleton" layer in the project.

Bone locking is often used to keep a character's feet from moving around on the ground. To do this, Anime Studio needs to move the character's legs automatically. Thus, it helps to use angle constraints to keep the knees from bending backwards. Use the Select Bone tool to select Frank's left shin bone as shown:



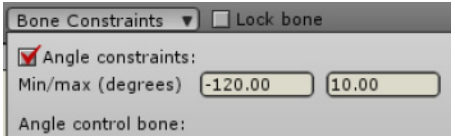
Select the left shin.

Now set up angle constraints for this bone. The minimum angle should be -10, and the maximum should be 120:



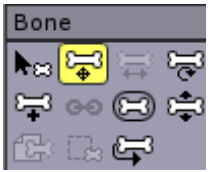
Angle constraints for left shin.

Now select the right shin, and set its angle constraints to -120 and 10.



Angle constraints for right shin.

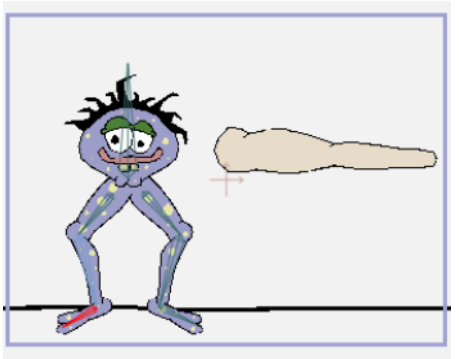
OK, the legs are prepared. Set the time to frame 24. Use the **Translate Bone** tool to drag Frank's spine bone around a small distance.



Translate Bone

Notice that his feet move around and don't stay in place.

Choose the Select Bone tool again. Go back to frame 0 and select the left foot bone:



Select the left foot.

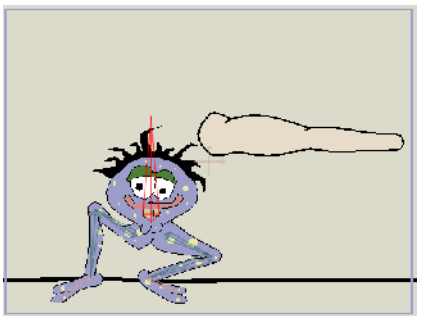
In the tool options area, turn on the "Lock bone" checkbox for this bone. Next, select the right foot bone and turn on "Lock bone" for it as well.

Lock both foot bones.

Now that the feet are locked, go back to frame 24, and use the **Translate Bone** tool again to drag Frank's spine around.

Translate Bone

Notice that now Anime Studio tries to keep Frank's feet locked to the ground. If you lift Frank too high, his legs will completely straighten out and his feet will lift from the ground - there's really no helping that, the same thing would happen to you if you were lifted off the ground. You can try rotating the spine bone too and see how the skeleton reacts.



Locked feet.

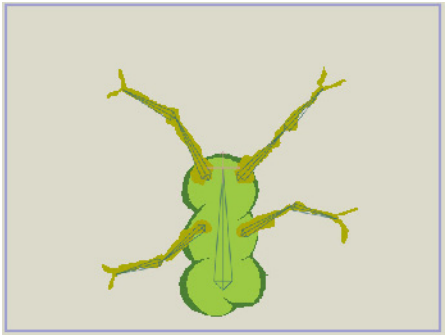
Bone locking is an animated parameter. You can turn on and off bone locking as many times as you want during an animation. This is especially useful when making a character walk - lock a bone as soon as a foot hits the ground, and unlock it just before the foot is to leave the ground for its next step.

Tutorial 3.3: Bone Dynamics

Anime Studio's bone dynamics system can be used to automatically move bones around in response to higher-level movement. Anime Studio uses a physical simulation of springs to calculate dynamic bone movement, making it suitable for a wide range of movements, such as flabby body parts, bouncy hair, waving arms, etc.

Start With a Sample File

For this tutorial, we'll start with a project file that's almost finished. It's named "Tutorial 3.3" and it's located in the "Tutorials/3 - Bones" subfolder within the main Anime Studio folder. Open this file in Anime Studio, and you should see something like this:

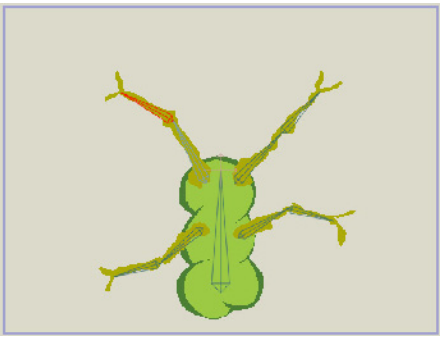


Starting point for this tutorial.

Play back the animation to see what we're starting with. The entire structure will tilt side to side and bounce up and down, remaining rigid the whole time. Only the vertical bone in the center of the skeleton is animated - all the others move with it because they are its descendants. Rewind the animation to frame 0 when you've seen enough.

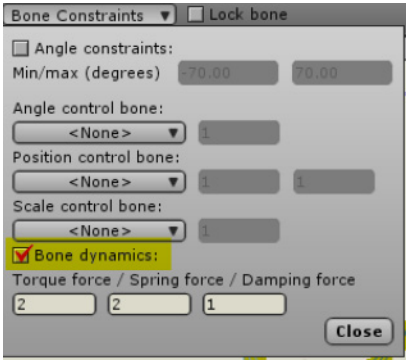
Use the **Select Bone** tool to select the top-left bone in the structure as shown below:

Select Bone

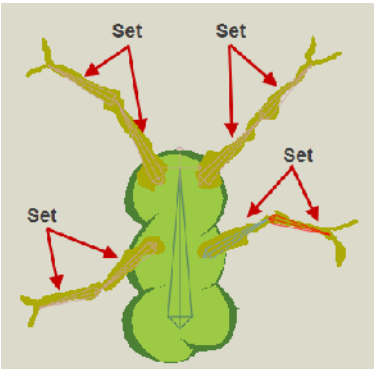


Select this bone.

In the tool options area at the top of the main Anime Studio window, click the "Bone constraints" popup box to open it. In the popup box, turn on the "Bone dynamics" check box. This tells Anime Studio to move the selected bone automatically according to the spring simulation.



Turn on bone dynamics.



All eight leg bones set

Select seven more bones (two in each of the "arms"), and turn on bone dynamics for each one. Here's a tip: you can leave the "Bone constraints" popup box open the whole time, just click on each bone in turn, then turn on bone dynamics for each one. If the "Bone constraints" popup box covers up some of the bones, you can pan the editing view by dragging with the right mouse button to expose the hidden bones. At this point, you should have turned on bone dynamics for every bone in the structure except the vertical center bone.

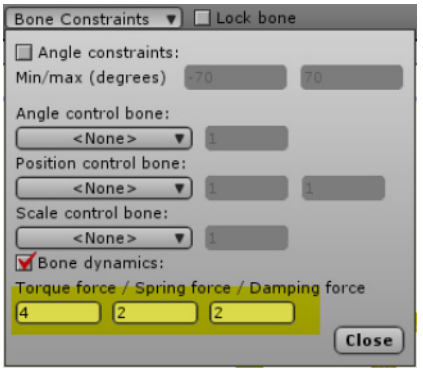
Play back the animation to see the difference. Now as the structure tilts side to side, the "arms" will bounce around in response to the movement of the center bone.

Adjusting Spring Parameters

So that shows the basics of how to use bone dynamics. Now let's take a look at how you can make adjustments to the "bounciness" of the springs. Select the top-left bone again, and re-open the "Bone constraints" popup box. Below the "Bone dynamics" checkbox are three parameters that allow you to fine-tune the effect. Set the Torque force to 4, Spring force to 2, and Damping force to 2, as shown below. Select

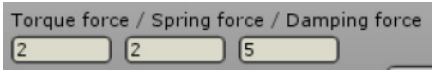
the bone's immediate parent (the second bone in the top-left arm), and apply the same dynamics parameters.

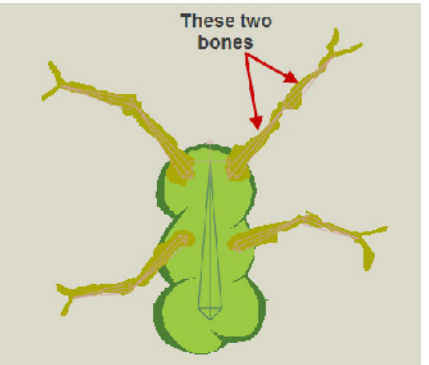
A higher Torque force means that a bone moves more in response to its parent's movement, Spring force determines how quickly it bounces back, and Damping force controls how quickly a dynamic bone stops moving (you can think of damping like friction). In this case, a high torque force means that the bone will move more strongly.



Adjusting dynamics parameters for both bones in the top left arm.

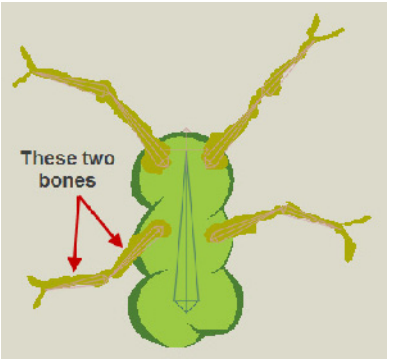
Next, select the two bones of the top-right arm (one at a time), and set the bone dynamics parameters to 2, 2, 5 (Torque, Spring, Damping). These settings will cause these bones to slow down their dynamic movement quickly - a high damping value is like making the bone move through a thick fluid.





Set a high damping force on these bones.

Finally, select the two bones of the bottom-left arm (one at a time), and set the bone dynamics parameters to 2, 4, 1 (Torque, Spring, Damping). The high spring force will cause this arm to bounce back very quickly.



Set a high spring force on these bones.

Try playing back the animation again. As you watch the final animation, note the differences between the four arms. The top-left arm swings in a wide arc because it has a strong response to the parent bone's movement. The top-right arm's movement is subdued because the damping force causes it to slow down more quickly. The bottom-left arm is very springy, and the bottom-right arm moves in accordance with the default bone dynamics settings.

The final result. (SWF File)

Tutorial 3.4: Character Setup

In this tutorial, you will learn how to set up the bone system for a complex character. This will involve splitting a character apart, creating bones, adjusting bone strength, and putting the character back together.

Start With a Sample File

For this tutorial, we'll start with a project file that already has the artwork for the character drawn - you'll just set up the bones. It's named "Tutorial 3.4" and it's located in the "Tutorials/3 - Bones" subfolder

within the main Anime Studio folder. Open this file in Anime Studio, and you should see something like this:

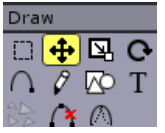
Starting point for this tutorial.

There are six vector layers in this project, containing the body parts for this character. Although all the artwork could be drawn in one vector layer, it is often easier to draw a character in multiple layers, arranging the body parts from back to front, as shown below:

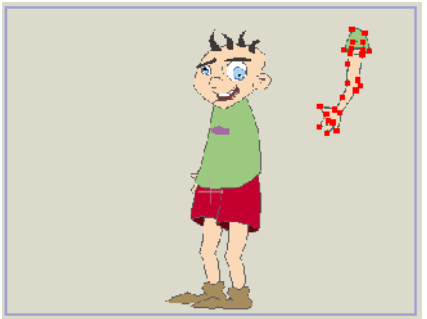
Starting point for this tutorial.

Split Apart the Character

In order to make bone setup easier, the first thing to do is split apart the character. Choose the **Edit > Select All** menu command. All the points in the right arm (your right, his left) should be selected. Activate the **Translate Points** tool and drag the mouse to move the arm off to the side and up a bit:

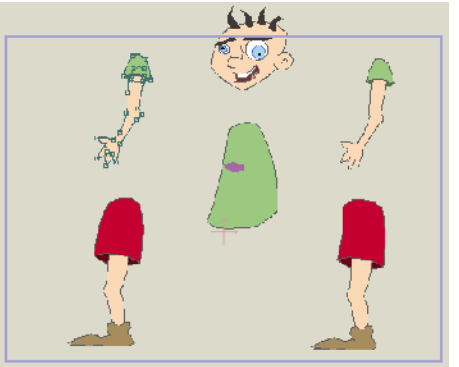


Translate Points



Arm moved off to the side.

Next, select the Head layer, and move all of its points upward. Repeat the process for all the layers of the character, except the Torso layer, moving the body parts away from the center, as shown below:



Body parts split apart.

The reason we split apart the character is so that we can add bones to each part, while keeping the bones independent of each other. Later in the tutorial we'll put the character back together again.

Add Bones

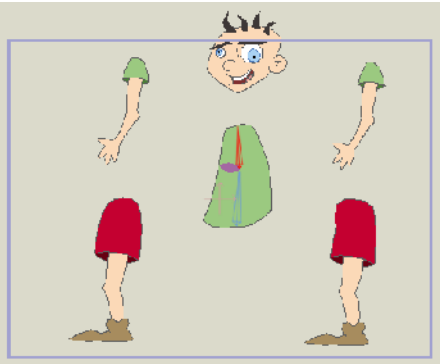
The next step is to add bones. Add a new Bone layer to the project, name it Skeleton, and move all the vector layers into it, keeping the same order they are in now:

New bone layer.

Using the **Add Bone** tool, add two bones going up through the torso, starting with the bottom one:

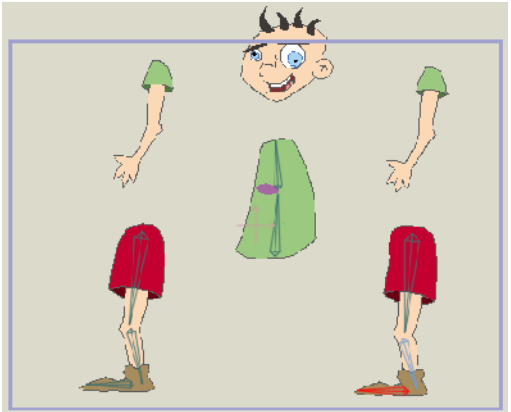
Add Bone

Next, add two bones to each arm, starting at the shoulder and going down - the shoulder bone should be parented to the upper torso bone.



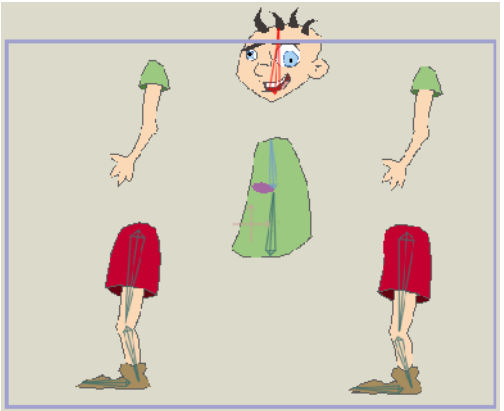
Two new bones.

Use the Select Bone tool to select the lower torso bone. Then, select the Add Bone tool and add three bones to one leg, starting at the hip and moving down through the foot. Repeat the process for the other leg. The hip bones should be parented to the lower torso bone.



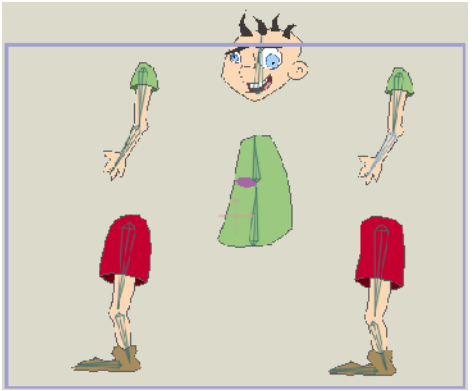
Leg bones added.

Use the Select Bone tool to select the upper torso bone, and then use the Add Bone tool to add one bone to the head.

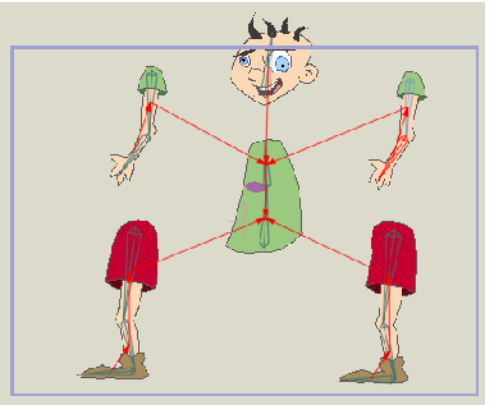


Head bone added.

Select the upper torso bone with the Select Bone tool. Then use the Add Bone tool to add two bones to one of the arms. Repeat the process for the other arm. This figure shows all the bones in place:

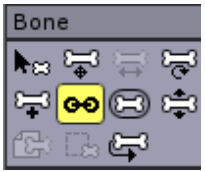


All the bones added.



All the bones added.

And this next figure shows the parenting of all the bones. The parenting arrows point from child bone to parent bone, and can be seen by activating the **Reparent Bone** tool:



Reparent Bone

At this point, feel free to try using the **Manipulate Bones** tool to see how the bone system works so far. The body parts should mostly move how you would expect, but not totally cleanly - the next step is to clean up the bones' influence.

Bones

Manipulate Bones

Adjust Bone Influence

Double-click the Skeleton layer in the Layers window to bring up the Layer Settings dialog. Go to the Bones tab and set the binding mode to "Region binding":

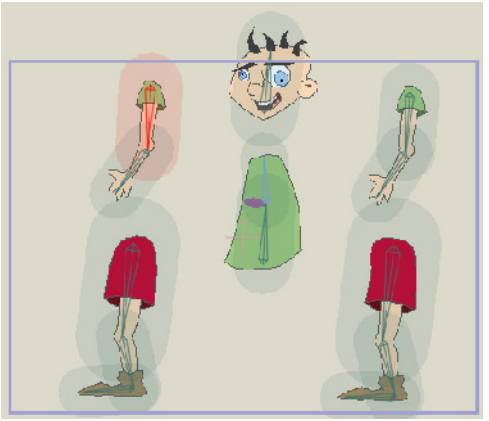
Turn on region binding.

When region binding is used, bones only move the points that lie in their region of influence. If a point is overlapped by multiple regions of influence, it will be affected by all the corresponding bones. If a point is in no bone's region of influence, it will move with the nearest bone.

This is different from flexi-binding, where all bones affect all points. Flexi-binding can be quicker to set up, but leads to more rubbery motion, since moving a hand will always cause a little bit of movement in a foot. Region binding makes separate body parts truly separate.

For region binding to work, however, you need to adjust the region of influence for each bone. To do this, activate the **Bone Strength** tool to display the bones' regions of influence:

Bone Strength



Initial regions of influence.

Using the Bone Strength tool, click and drag on each bone in turn to adjust its region of influence. The correct adjustment for a region of influence it generally to surround the points along that section of bone. The most important regions are at the joints - the knees and elbows and such. Those are the areas where the regions of two bones overlap, and points will bend under the control of both bones. For parts like this character's head, the region of influence isn't very important - since there's just one bone, the points outside the region of influence will still move with that bone. Here's how you should adjust the regions of influence (don't worry about matching this exactly, just try to get kind of close):Adjusted regions of influence.

Bones

Try using the **Manipulate Bones** tool again to test the bone setup. The character should move much more cleanly now - when moving an arm, for example, only that arm should move, and you should see no extra movement in other body parts.

Manipulate Bones

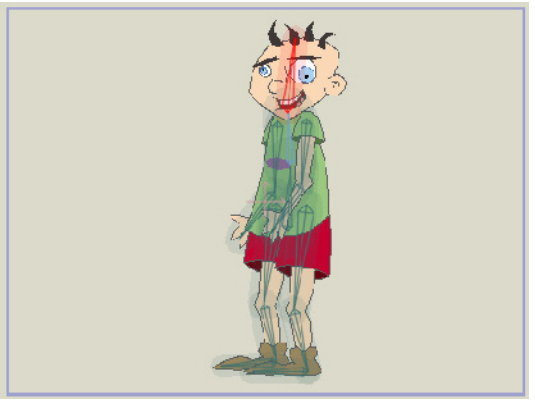
Put the Character Back Together

The final step is to reassemble the character. Activate the **Offset Bone** tool.

Offset Bone

Click and drag on the top bone of each body part to move that part

back into position. Move each arm by the upper arm bone, each leg by the thigh bone, and the head by its single bone. When each part is moved back into place, the character should look like this:



Re-assembled character.

Frame 0 is considered the "setup" frame for bones. When the time is set to frame 0, the character will still appear split apart (unless you're using the Offset Bone or Manipulate Bones tools). However, at other frames in the animation, the character will be re-assembled according to how you used the Offset Bone tool.

Try moving the character around again with the **Manipulate Bones** tool. The body parts will still move independently, even though they now overlap. Because the bones were set up on a split-apart character, that character could be re-assembled while still keeping the body parts independent.

Manipulate Bones

Final character.

If you're interested in taking a look at the final Anime Studio file, it's

named "Tutorial 3.4 Final" and it's located in the "Tutorials/3 - Bones" subfolder within the main Anime Studio folder.

Images

Tutorial 4.1: Image Layers

This tutorial introduces another type of layer in Anime Studio: Image Layers. Image layers are a way of including artwork created in other programs in a Anime Studio project. Any application that can produce image files can be used with Anime Studio: photo editors, 3D modeling programs, natural media painting programs, the list goes on...

An image layer in Anime Studio contains a single image file that can be used as a background, or combined with a bone layer to build a character. Although they're called "Image" layers, an Image layer can also make use of a movie file as its source. Image layers and vector layers can be mixed and matched in the same project.

Alpha Channels

You'll notice that the images used in this tutorial do not appear rectangular. This is because they make use of an alpha channel to mark some parts of the image as transparent. We recommend using PNG images with Anime Studio because they support full alpha channel transparency. You'll need to use an image editing program (like Adobe Photoshop) to create images with transparency.

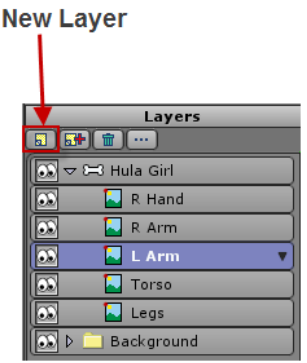
Start With a Sample File

For this tutorial, we'll start with a project file that's almost finished. It's named "Tutorial 4.1" and it's located in the "Tutorials/4 - Images" subfolder within the main Anime Studio folder. Open this file in Anime Studio, expand the "Hula Girl" layer in the Layers window, and you should see something like this:

Starting point for this tutorial.

This project is almost complete as it is. The only thing that's missing is the dancer's left hand. Add the hand as follows:

First, click on the layer named "L Arm" (we want the new layer to be just above the left arm). Next, click the new layer button in the Layers window to create a new layer.



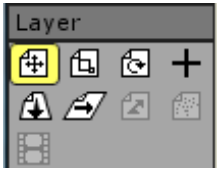
In the popup menu that appears, choose "Image". Anime Studio will prompt you to select an image file. Choose the file "l_hand.png" in the "Anime Studio/Tutorials/4 - Images" folder. Double-click the new layer and rename it "L Hand". At this point, your Layers window should look like this:

Left hand added.

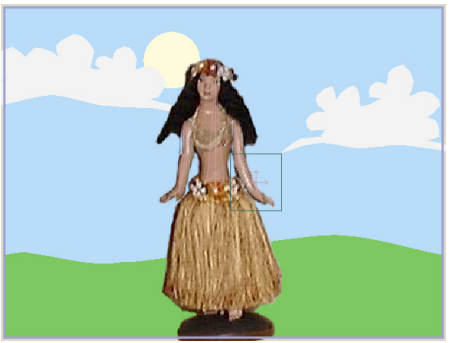
New image layers are centered in the workspace, so the dancer's hand is not yet properly aligned:

The new hand.

To position the arm properly, use the **Translate Layer** tool to drag the left hand into position at the end of the left arm. Allow for a little overlap between the two parts at the elbow:



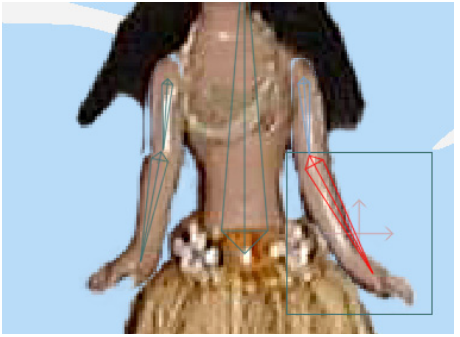
Translate Layer



Left hand in position.

The last step is to attach the new part to the dancer's skeleton. Select the **Bind Layer** tool, and click on the lower arm bone on the dancer, as shown below:

Bind Layer



Bind the image layer to the forearm.

You're done! To see the animation in action, press the Play button. Of course, we skipped over the process of building and animating the skeleton, but the basics of working with skeletons were covered in previous tutorials - all of that information applies when using bones with image layers.

Images

The final result. (SWF File)

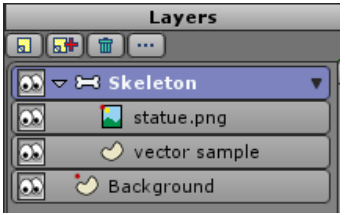
Tutorial 4.2: Image Warping

This tutorial demonstrates Anime Studio's image warping feature. This feature allows you to use a skeleton to distort an image. In this way, you can animate photographs, hand-drawn artwork, or anything you can get into an image file in a flexible way.

Start With a Sample File

For this tutorial, we'll start with a project file that's almost finished. It's named "Tutorial 4.2" and it's located in the "Tutorials/4 - Images"

subfolder within the main Anime Studio folder. Open this file in Anime Studio, expand the "Skeleton" layer in the Layers panel, and you should see something like this:



Starting point for this tutorial.

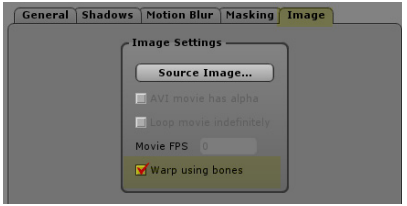
The bone layer contains two sub-layers: an image layer and a vector layer. Try playing back the animation. Notice that only the vector layer moves with the skeleton:

Only the vector layer moves.

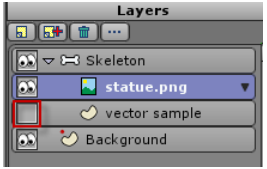
The reason that the image layer isn't moving is that it hasn't been connected to the bones yet (as the vector layer has been).

Using Image Warping

To warp the image layer with the skeleton, double-click the "statue.png" layer, and go to the "Image" tab in the Layer Settings dialog. Turn on the checkbox marked "Warp using bones" and click OK.



Also, turn off the visibility for the "vector sample" layer - it was only an example, and we don't want it in the final animation.



Play back the animation again, and you should now see the image moving with the skeleton:

Image warping.

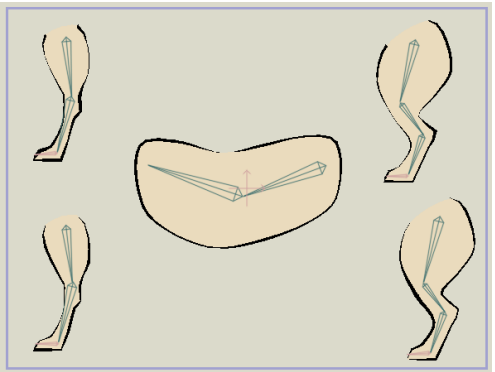
Tip: Notice the horizontal bone at the base of the statue. This bone doesn't move at all in the animation, so why is it even there? When using image warping, the image is distorted by all the bones in the skeleton, and the nearest bone to any part of the image has the most influence. We don't really want the base of the statue to move, so an easy way to prevent this is to add a bone in the area we want to remain still, and not animate it. Another trick you might use when warping images is to break up an image into logical parts (for example, make the arms and legs of a person separate images from the main body). Then, use different skeletons to control the various re-assembled parts. This way, a leg bone can't have any influence over an arm.

Tutorial 4.4: Image Textures

In this tutorial you will learn how to use images as textures to add detail to a character.

Start With a Sample File

For this tutorial, we'll start with a project file that's almost finished. It's named "Tutorial 4.4" and it's located in the "Tutorials/4 - Images" subfolder within the main Anime Studio folder. Open this file in Anime Studio, and you should see something like this:



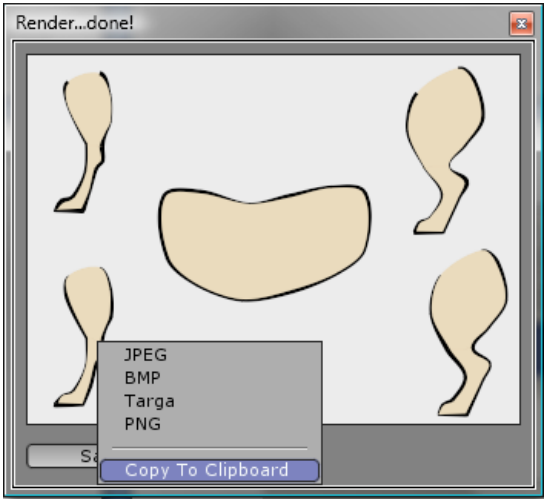
Starting point for this tutorial.

Play back the animation to see what's going on, and then be sure to rewind the animation to frame 0. What you're going to do is hand paint some texture details to go on this character.

Paint the Textures

The first step is to paint some textures to go on this headless animal's body. Select the **File > Preview** menu command to create a full-quality view of the animal's current state.

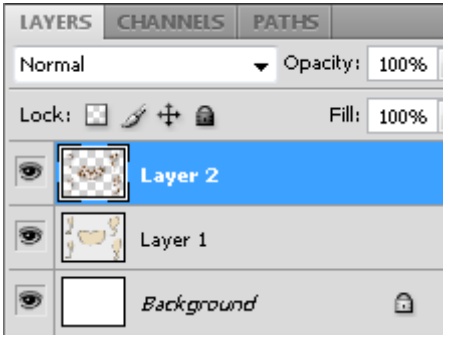
In the popup menu at the bottom of the Render window, select "Copy To Clipboard".



Rendered animal

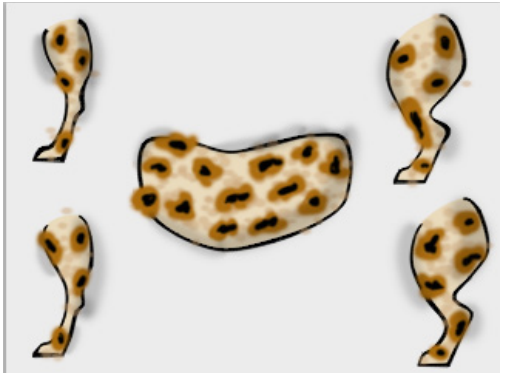
Then, start up your favorite image editing program (we recommend Adobe Photoshop) and create a new document the same size as the Anime Studio project (320x240 in this case). Paste the copied image into the new document.

Create a new layer in your image editing program and paint some kind of texture details onto the animal's body parts. It's very important that the texture be on a layer of its own. If you're using Photoshop, the layer arrangement would look something like this:



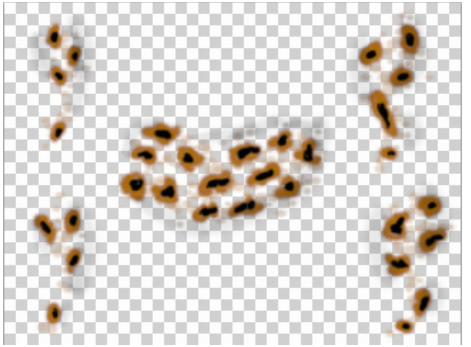
Layers in Photoshop.

You can paint whatever details you want. Here's an example of something you might paint in your image editor. Don't worry about painting outside the lines:



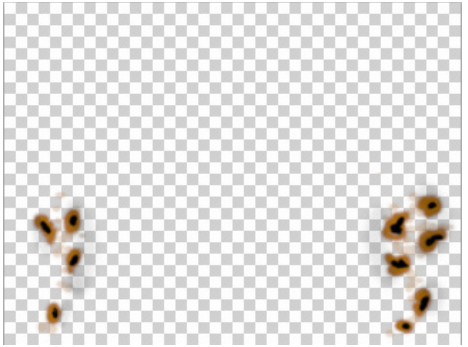
Painted on texture.

When your texture is finished, get rid of the background layers so that only the texture is left with a transparent background (you're still working in Photoshop or similar program at this point):

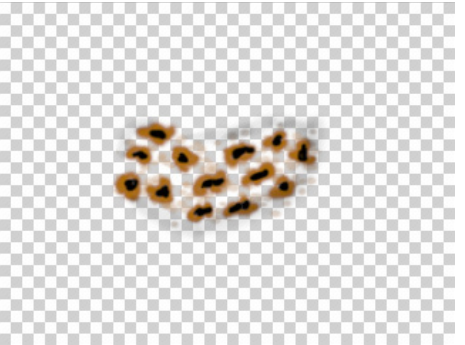


Background removed.

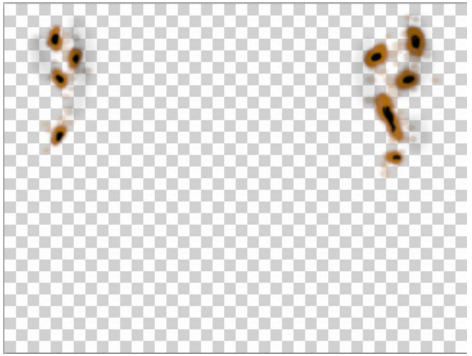
Finally, you need to save the texture as three separate files - one for the back legs, one for the torso, and one for the front legs. For each version of the texture, delete the parts of the texture that are not attached to the corresponding body parts. Save the images in PNG format, since PNG properly stores the transparent background. Name the files "back_tex.png", "body_tex.png", and "front_tex.png". Here's what the three textures should look like:



Back legs texture. back_tex.png



Body texture. body_tex.png



Front legs texture. front_tex.png

You're done working with the image editor - it's time to bring the textures back into Anime Studio.

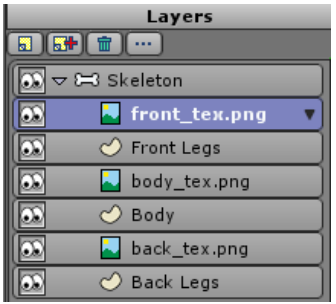
Note: If you're having trouble creating the image textures, we have provided some files for you to examine. Look at the file "Tutorial 4.4 Texture.psd", located in the "Tutorials/4 - Images" subfolder within the main Anime Studio folder - this is the Photoshop file. Also, look at the files "back_tex.png", "body_tex.png", and "front_tex.png", which are the finished texture files.

Import Textures

Back in Anime Studio, create a new Image layer, and select "back_tex.png" as the source image. Place the layer inside the bone group, just above the "Back Legs" layer.

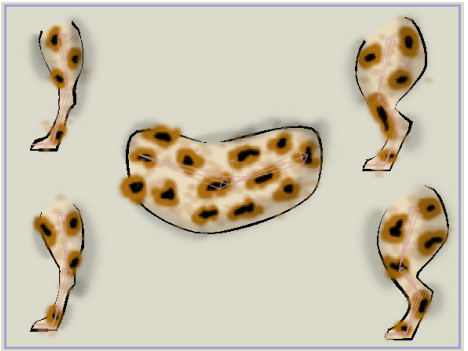
Create another image layer for "body_tex.png" and place it just above the "Body" layer.

And finally, create a third image layer for "front_tex.png" and place it just above the "Front Legs" layer. Here's how the new image layers should be arranged:



Three new image layers.

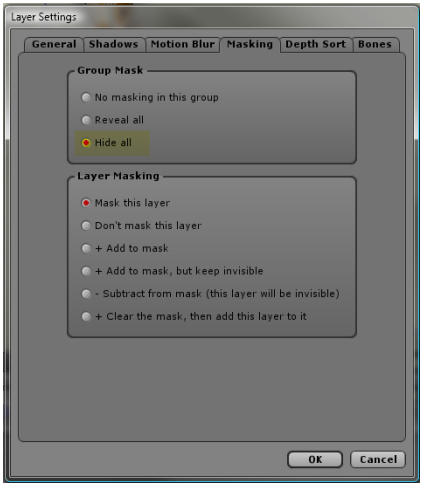
At this point, the textures are finished and in place, but they are a little messy, and go outside the bounds of the actual body parts:



Textures applied in Anime Studio.

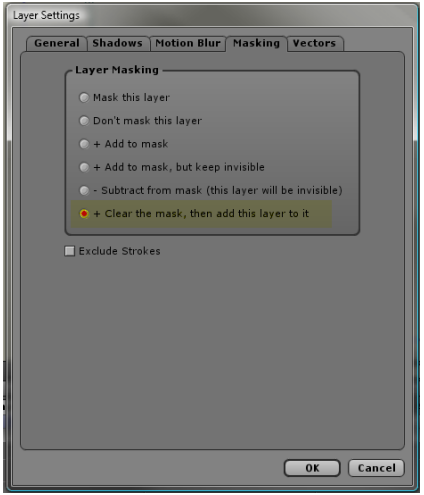
Use Masking for Clean Edges

The final step is to clean up the texture edges using layer masking. Double-click the "Skeleton" layer in the Layers window to bring up the Layer Settings dialog. Go to the Masking tab, and set the group mask to "Hide all":



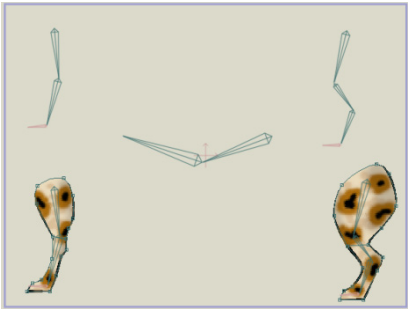
Turn masking on for the group.

Next, double-click the "Back Legs" vector layer to bring up the Layer Properties dialog for that layer. Go to the Masking tab, and set the masking mode to "+ Clear the mask, then add this layer to it":

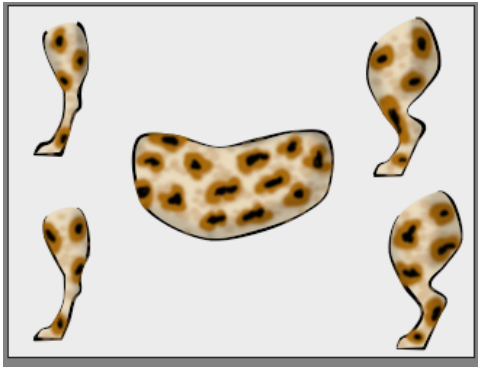


Set the masking mode for the Body layer.

What this masking mode does is make all objects invisible, except where this layer has solid areas. So, the "back_tex.png" image layer will only be visible directly on top of the "Back Legs" vector layer, preventing the texture from going outside the lines of the back legs.



Set the masking mode for both the "Body" and "Front Legs" vector layers to "+ Clear the mask, then add this layer to it", just like you did for the back legs. At this point, all the textures should be forced to stay inside the lines:



Textures cleaned up with masking.

Play back the animation again and you'll see the image layers warp along with the vector layers in response to bone movement.

Animation

After all the preparation time drawing your objects, assigning fill colors, and setting up bones, you move on to animating them. This is where things actually start to move around.

Animating in Anime Studio is based on the concept of keyframes. A keyframe is a point in time where you position some object (either a point, a bone, or an entire layer). A keyframe tells Anime Studio exactly where that object should be and when. Keyframes are set up at "important" moments in time - typically where an object begins moving, stops moving, or changes direction. Between keyframes, Anime Studio automatically calculates how to move an object so that it gets from one keyframe to the next in the amount of time allowed between the keyframes.

To create a keyframe, just set the current time to whenever you want the keyframe to occur, then move the object to the desired position. Controlling the current time and working with keyframes after they've been created is discussed in "Timeline Window" on page 195.

You can animate several types of motion in an Anime Studio project, and they can each be used alone or in combination. The first type is point motion. Point motion very basic - it just involves moving individual points around in time. Point motion is good for small distortions to an object where you want something to look soft and flexible (turning up the corners of a mouth into a smile, bulging out a belly, etc.). You can move a shape in any way you want with point animation, but it might require manipulating a lot of points - in many cases bone animation can simplify the job.

Bone animation involves setting up a skeleton system for an object and then moving the skeleton around. By carefully constructing a skeleton, you can easily move a character around like a puppet.

Layer animation is for very simple, large-scale motion. When you move a layer, everything in it moves together. This doesn't give you a lot of flexibility as far as what you can animate this way, but it's a good way to get certain effects. If you want an entire group of objects to pan side to side or zoom in or out, then layer animation is the tool to use.

The keyframes you define are visible in the Timeline, starting at frame 1. Frame "0" is a special frame in an Anime Studio project - the original placement of all your objects is stored at frame 0. If you want to modify an object's original shape or position, or add new objects, this should be done at frame 0. Whatever you do to an object in later frames can never affect an object's original shape and position, so even if you think you really screwed something up, you can always delete some keyframes and get back your original drawings.

This chapter has a useful hands-on overview of how to animate in Anime Studio, using each type of motion (point, bone, and layer). Once you've mastered Anime Studio's animation tools, animating is a simple job of repeatedly using the tools you already know, keyframe by keyframe.

Tutorial 5.1: Automatic Lip-Sync

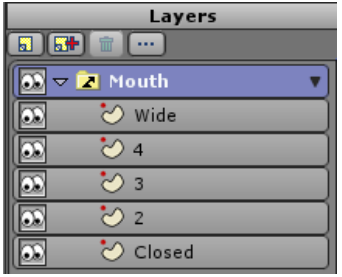
This tutorial uses Anime Studio's Switch layers to show you how to perform instant, automatic lip-syncing. A switch layer contains multiple sub-layers, but only one of the sub-layers can be displayed at a time. This makes it very useful for lip-sync animation: each sub-layer can be a

mouth shape for a different sound.

The method of lip-sync described in this tutorial is quick and easy, though not always super-accurate (but give it a try - it may be accurate enough for your animation). For the most accurate lip-sync results, we recommend using a program like Papagayo. Lip-syncing using Papagayo is covered in "Tutorial 5.2: Phoneme Lip-Sync" on page 79.

Start With a Sample File

For this tutorial, we'll start with a project file that's almost finished. It's named "Tutorial 5.1" and it's located in the "Tutorials/5 - Animation" subfolder within the main Anime Studio folder. Open this file in Anime Studio, expand the "Mouth" layer in the Layers window, and you should see something like this:

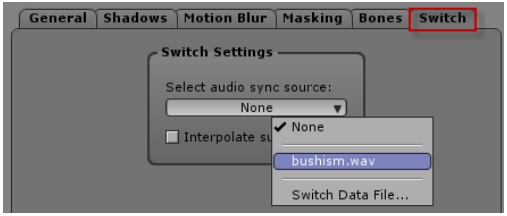


Starting point for this tutorial.

Examine the sub-layers in the "Mouth" layer. Notice that from bottom to top they range from closed to wide open. This is the basic setup for automatic lip-syncing. The number and names of the sub-layers don't matter, as long as the lowest one is closed and the highest one is wide open.

Next, we want to hear the audio file that will go along with the lip-syncing. Choose the **File > Import > Audio** command from Anime Studio's menu and select the file "bushism.wav", located in the "Tutorials/5 - Animation" subfolder within the main Anime Studio folder. You can play back the animation now to hear the result, but the mouth doesn't move yet. Stop the playback before proceeding.

Double-click the "Mouth" layer. When the Layer Settings dialog opens, click the "Switch" tab:

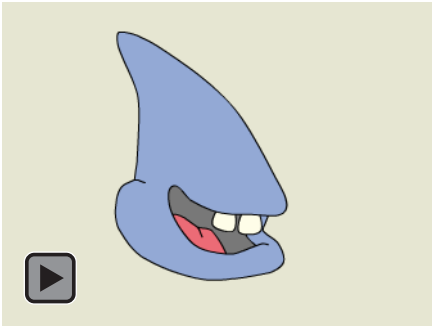


Layer settings for the mouth.

Click the "Select audio sync source" button to select the file that will control the Switch layer. In the file dialog that appears, select the file "bushism.wav". Click the dialog's OK button.

That's it! The audio file was analyzed and keyframes were attached to the Switch layer. When the audio is quiet, Anime Studio activates the

lowest layer (the closed mouth), and when the audio is loudest, Anime Studio uses the highest layer (the wide open mouth). In between, Anime Studio switches on the in between mouths. Play back the animation to see and hear the result. In general, because automatic lip-sync is based on the actual sound in the audio file, it is important to use an audio file without background noise or music.



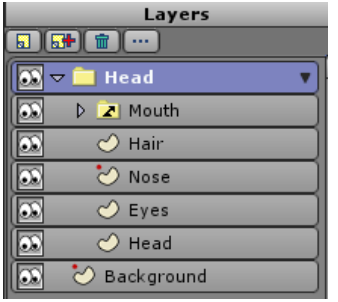
The final result. (SWF File)

Tutorial 5.2: Phoneme Lip-Sync

This tutorial covers another method of animating lip-sync. With this method, the lip-sync is based on ***phonemes***. Phonemes are the basic "building block" sounds that make up words. When you do lip-sync based on phonemes, it requires you to break down the words of dialog into their basic sound elements. There are software programs out there that can help you do this - the one that we recommend for using with Anime Studio is the free program Papagayo.

Start With a Sample File

For this tutorial, we'll start with a project file that's almost finished. It's named "Tutorial 5.2" and it's located in the "Tutorials/5 - Animation" subfolder within the main Anime Studio folder. Open this file in Anime Studio, expand the "Head" layer in the Layers window, and you should see something like this:



Starting point for this tutorial.

This project is almost complete. The only thing apparently missing is the animation for the character's mouth. Play back the animation. The

mouth is there (it's a switch layer), but no animation data has yet been assigned to it, so it doesn't move.

Double-click the "Mouth" layer. When the Layer Settings dialog opens, click the "Switch" tab:

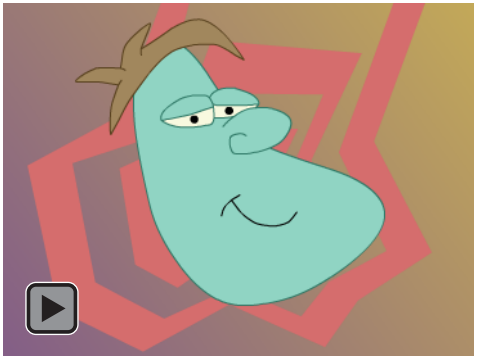
Layer settings for the mouth.

Click the "Select audio sync source" button to select the switch data file that will control this switch layer. In the file dialog that appears, select the file "vista.dat" located in the "Tutorials/5 - Animation" subfolder within the main Anime Studio folder.

The vista.dat file was created using a program called Papagayo. Papagayo is a tool designed to help you synchronize animation to audio tracks. This particular file is based on an example file included with Papagayo, and is an animation of a mouth speaking, "Hasta la vista, baby." For more information, see the Papagayo documentation.

The Mouth layer contains all the mouth shapes needed to speak any phrase. You can examine the Mouth layer to see the sub-layers it contains. Each sub-layer is named after a different phoneme. You can use any set of phonemes you choose - the ones in this mouth are based on the same default set used by Papagayo, which is a good place to get started. To make the mouth speak a different phrase, just create a different animation data file in Papagayo, and select it into the mouth layer as we just did for the vista.dat example.

To hear the sound along with the animation, choose the **File > Import > Audio** command from Anime Studio's menu and select the vista.wav file located in the "Tutorials/5 - Animation" folder. Now, when you play back the animation in Anime Studio you will hear the audio that goes with the lip-sync. Also, if you export the animation as a QuickTime or AVI movie, the audio will be included in the movie file.



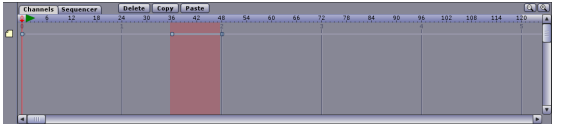
The final result. (SWF File)

Tutorial 5.5: Cycling

It is possible in Anime Studio to automatically cycle a section of animation, repeating it over and over as many times as you wish. Cycling is a special type of keyframe interpolation, and this tutorial will show you how to set it up.

Start With a Sample File

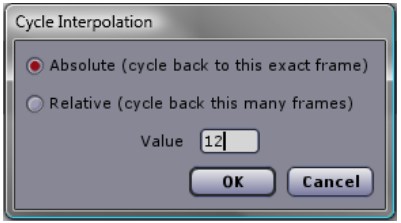
For this tutorial, we'll start with a project file that's almost finished. It's named "Tutorial 5.5" and it's located in the "Tutorials/5 - Animation" subfolder within the main Anime Studio folder. In the timeline, you can see that the top layer, "Red Blinker", has two keyframes in the Layer Visibility channel. The layer becomes invisible at frame 36, and visible again at frame 48. This is also shown by the red background in the timeline during the layer's invisible period:



Starting point for this tutorial.

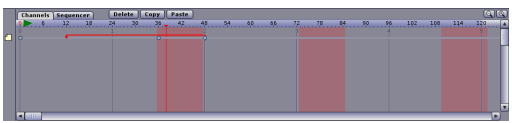
You can play back the animation to see what's going on. Basically, the red light starts off turned on, then it shuts off for a while and finally turns back on.

Using cycling, you can make the light blink over and over. Right-click on the second keyframe (the one at frame 48), and in the popup menu that appears, select "Cycle...". You're telling Anime Studio that after this keyframe, you want the animation to cycle back to an earlier point in the animation. A dialog will appear asking you the specifics of the cycling. Enter the values shown below:



Cycle settings.

When you click OK in the cycle dialog, the timeline will update to show the cycle. There are three changes you will see: First, the keyframe in question will change to a left-pointing arrow to indicate that it cycles backwards. Second, a long red arrow will point back to the point in the timeline that the visibility channel is cycling back to. Third, later in the timeline you will see other sections with red backgrounds to indicate that the layer is invisible during those periods:

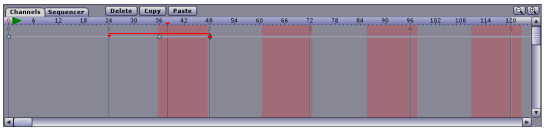


Cycling reflected in the timeline.

You can play back the animation again to see the result. The "Red Blinker" layer will flash on and off multiple times, even though you didn't add any more keyframes - the Layer Visibility channel is just cycling back and repeating a section of animation over and over again.

Animation

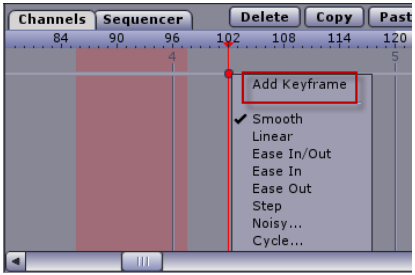
Let's try adjusting the cycle duration. In the Timeline window, hold down the **Ctrl** key while you click and drag on the second keyframe (the one that cycles). As you drag the mouse side-to-side, you'll see that the cycle duration changes, as the arrow that points back from the cycling key gets longer and shorter. Adjust the cycle duration so that the keyframe cycles back to frame 24:



Adjusted cycle duration.

If you play back the animation now, you'll see that the light blinks more quickly now, since the cycle duration is shorter.

Finally, to break a cycle, all you have to do is add another keyframe when you want the cycle to end. Set the current frame to 102, right click in the Layer Visibility channel, and select "Add Keyframe" from the popup menu that appears. The new keyframe will appear, and at that point the cycling will end. Play back the animation to confirm this.



New keyframe at frame 102.

Conclusion

Cycling can be used in any animation channel in Anime Studio. Any keyframe can be made to cycle back in time by setting "Cycle" as the key's interpolation method. You can cycle a channel all the way back to the beginning of an animation, or just back a few frames. Cycling will repeat itself forever or until a new keyframe is reached.

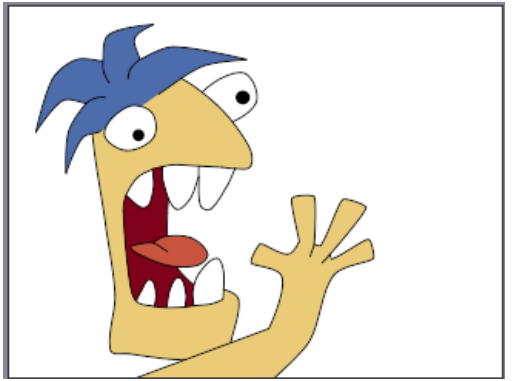
Effects

Tutorial 6.6: Shadow Tricks

This tutorial shows you how the layer shadow options can be used to create visual effects other than shadows. Glows and outlines are the two possibilities we'll look at.

Start With a Sample File

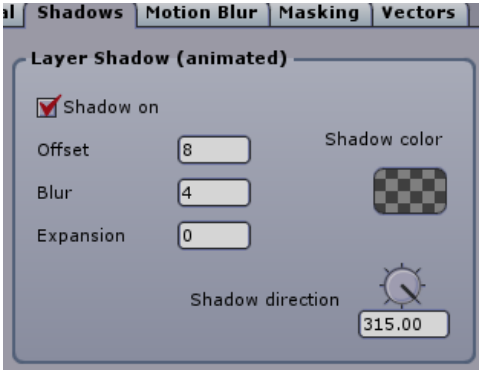
For this tutorial, we'll start with a project file that's almost finished. It's named "Tutorial 6.6" and it's located in the "Tutorials/6 - Effects" subfolder within the main Anime Studio folder. Render this file to see what it looks like to start with:



Starting point for this tutorial.

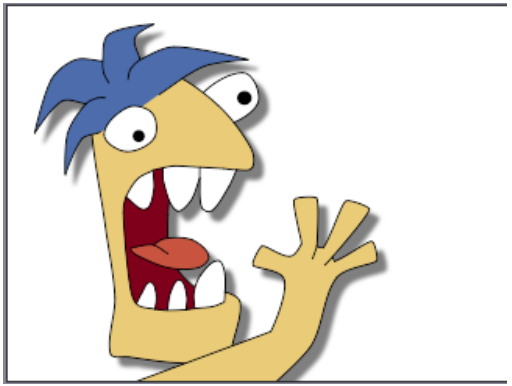
Basic Layer Shadow

Before we try any tricks, let's take a look at a basic layer shadow. Double-click the only layer in this file, Layer 1, to bring up the Layer Settings dialog. Go to the Shadows tab, and leaving all the other settings alone, turn on the "Shadow on" checkbox. Click OK to dismiss the dialog.



Default shadow settings.

Try rendering the scene again, just to be sure that you have an idea what a regular layer shadow looks like in Anime Studio:



Layer shadow.

Layer Glow

Now we'll change the shadow settings to create a glow effect. Double-click Layer 1 again to bring up the Layer Settings dialog. Change the Layer Shadow settings to match the values below:

Glow settings.

Layer glow.

An offset of 0 means the "shadow" will be centered under the layer that is casting it. With an offset of 0, the shadow direction has no significance. A high blur value gives the glow a nice soft edge. Finally, the expansion parameter tells Anime Studio to expand the shadow, making it bigger than the layer itself. Without expansion, the glow would just barely extend beyond the edge of the layer. The exact color you choose is not important - just be sure to make the color opaque (Alpha = 255). A transparent glow may be too faint to see. Render the scene again, and it should look like this:

Layer Outline

Let's change the shadow options once again to create an outline effect. Some styles of animation use a heavier outline around the outside of objects than for interior lines. Adjusting the layer shadow values in the right way can make this style very easy to accomplish. Double-click Layer 1 again to bring up the Layer Settings dialog. Change the Layer Shadow settings to match the values below:

Outline settings.

Layer outline.

Again, we use an offset of 0 to keep the "shadow" centered under the layer. A blur value of 0 is used to keep a hard edge on the shadow. Finally, the expansion parameter is used in this case to set the width of the outline effect. For this effect, it's important to make the color totally black and totally opaque (Alpha = 255) to match the interior lines. Render the scene again, and it should look like this:

Tutorial 6.7: Camera and Depth Effects

This tutorial demonstrates Anime Studio's camera tools. These tools allow you to move an entire scene around as if you were pointing a camera at it. With a little setup work, you can even create different layers of depth in the scene.

Start With a Sample File

For this tutorial, we'll start with a project file that's almost finished. It's named "Tutorial 6.7" and it's located in the "Tutorials/6 - Effects" subfolder within the main Anime Studio folder. Open this file in Anime Studio, and you should see something like this:

Starting point for this tutorial.

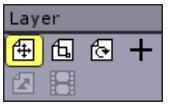
This file contains a few layers of simple scenery that we will move the camera across. To do this, select the **Track Camera** tool and drag the mouse around in the main editing area.

Track Camera

Notice how all the layers move together, even though they aren't grouped. When you move the camera around, it affects ***all*** the layers in a project. In the tool options area at the top of the main Anime Studio window, click the Reset button to reset the camera.

Creating Depth

Now we'll introduce some depth into the scene. Activate the **Translate Layer** tool and select the layer called "Right Hill".

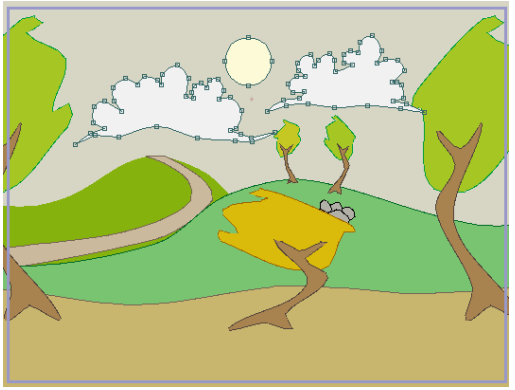


Translate Layer

In the tool options area at the top of the main Anime Studio window, change the Z value to -1 and press **Enter**. Below you can see where to set the Z value for the layer.

Setting a layer's Z value.

Now select the "Left Hill" layer, and set its Z value to -2. Finally, select "Sky", and set its Z value to -20. When you're finished, your scene should look similar to the following figure.



Right Hill, Left Hill, and Sky layers moved on the Z plane.

Try dragging the **Track Camera** tool around again and notice the difference. It's like driving in a car - nearby objects go by quickly, while distant objects seem to move slowly. In the tool options area at the top of the main Anime Studio window, click the Reset button to reset the camera.

Track Camera

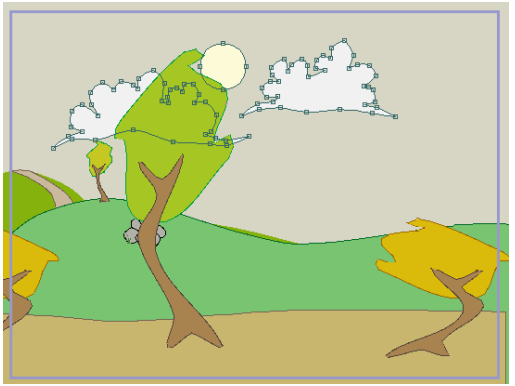
When you've seen enough, select the **View > Reset** menu command to go back to the default camera view.

Animating Camera Movement

Now we'll try animating the camera. Make sure the current frame is set to 0, and select the **Track Camera** tool.

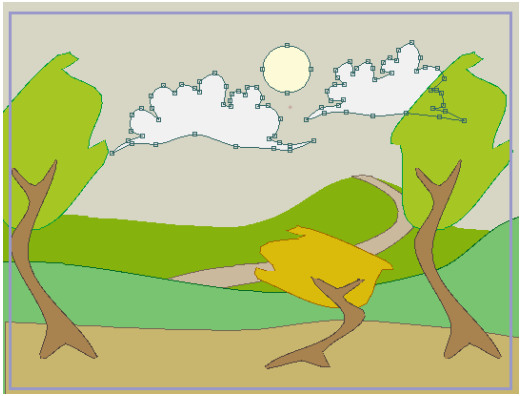
Track Camera

Drag to the left in the main editing area until you set up a view that looks about like this:



Camera view at frame 0.

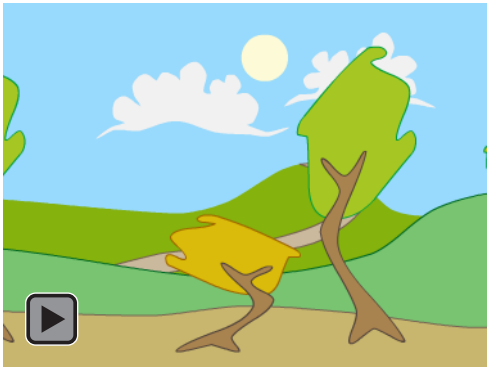
Next, set the current frame to 72, and drag to the right. This will pan the camera to the left - keep going until you have a view that looks like this:



Track to the left.

Press the Play button in the timeline to play back this simple camera animation. Notice how the layers of the project seem to pass in front of and behind each other. This is a simple way in Anime Studio to create a sense of depth.

Effects



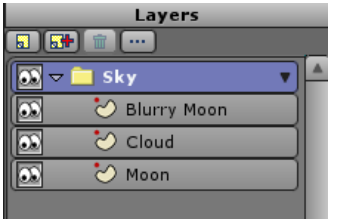
The final result. (SWF File)

Tutorial 6.9: Moon and Clouds Effect

This tutorial shows you how to create the effect of clouds moving in front of a moon. Layer masking and blurring is used to create an effect that is not only good for a moon and clouds, but may inspire you to think of new ways to use layer masking.

Examine a Finished Animation

For this tutorial, we're going to examine an animation that is completely finished. Open the file "Tutorial 6.9", located in the "Tutorials/6 - Effects" subfolder within the main Anime Studio folder. The layers in this file are arranged as shown below:



Starting point for this tutorial.

This animation relies on masking and blurring effects that aren't apparent in Anime Studio's editing view. To see what the final effect is, either export the animation as an AVI or QuickTime movie. (Because blurring is a key part of this effect, exporting to SWF is not an option - SWF export does not support blurs.)

The final result.

Notice that the moon appears sharp until the cloud moves in front of it. Then, the parts of the moon obscured by the cloud become blurry. This effect is easy to achieve using layer masking.

How It's Done

There are two parts to this effect. First, there are actually two moons in the animation: The "Moon" layer is the regular, sharp version of the moon you see in Anime Studio's editing view. Two layers up is the "Blurry Moon" layer - this is a duplicate of the "Moon" layer, with some layer blur applied.

The trick is to control which moon is visible at which point in time in the final exported movie. To do this, we use layer masking. Try double-clicking each of the layers in turn to bring up the Layer Settings dialog - then, go to the "Masking" tab. You'll find that the "Sky" group has masking turned on - by default, all objects are invisible. The "Moon" layer is set to be immune to masking, while the "Cloud" layer adds to the layer mask.

The result of these mask settings is that first the "Moon" layer is drawn - this is the regular, sharp moon - and is not affected by any masking. Next, the "Cloud" layer is drawn on top of that. When the cloud moves in front of the moon, it covers up the moon. Finally, the "Blurry Moon" layer is drawn on top of the cloud. Because of the mask, the blurry moon only appears on top of the cloud, it is not visible outside of the cloud object. Even though the blurry moon is in front of the clouds, the effect looks like the moon shining from behind the clouds.

Here's another example of the same technique. In this case, we see a character who appears to be blurred by the smoke passing in front of him. The exact same blurring and masking trick is used as in the case of the moon:

The final result.

Using Anime Studio

Layer Types

Drawings in Anime Studio are vector-based. Vector drawings are different from pixel-based images (like a photograph) in that they use lines and curves to represent a picture, rather than a grid of colored pixels. This difference makes a lot of things easy in Anime Studio that would be difficult or impossible to do with a pixel-based image.

First of all, since an Anime Studio drawing is represented as a bunch of curves, you can reshape the curves at any time, without ever losing precision. Also, Anime Studio projects are relatively small, even for complex animations - this means Anime Studio doesn't require much memory even when working on a long movie. Vectors also have benefits when it comes to animation. By moving just a few points, you can totally change the shape of an object over time.

You're not restricted to vector artwork, though - Anime Studio also has Image Layers. Using this type of layer, you can work with regular images within an Anime Studio project. So, Anime Studio is not strictly vector-based, but you will probably still use mostly vector layers, as image layers are not as flexible when it comes to animation.

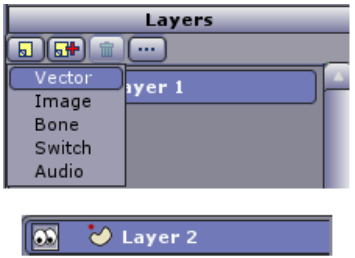
Of course, most standard image and movie formats are not vector-based, so when you're done working on a Anime Studio project, it must be "rendered" to create a traditional pixel-based image. During the rendering process, Anime Studio can apply various effects to the objects, such as shading and blurring.

Anime Studio is designed in such a way that projects are split into "layers". You can have many, many layers in a Anime Studio project, each representing a different element in a scene or animation, such as background scenery, a character, or a title. Some layers can even contain other layers, so a more complex object, such as a character, might contain separate layers for each arm and leg. Anime Studio currently supports the following types of layers:

- ***Vector Layers*** are used to hold vector-based artwork. These are the main type of layer you will use to create drawings. See "Vector Layers" on page 96 for more information.
- ***Image Layers*** can be used to bring in images from other applications. Image files created in 3D programs or photo editing applications can be used in Anime Studio with Image Layers. See "Image Layers" on page 96 for more information.
- ***Bone Layers*** contain skeletons that are used to control the artwork in your vector and image layers. You manipulate skeletons as if they were "puppets" by bending arms and legs to make a character move. See "Bone Layers" on page 97 for more information.
- ***Switch Layers*** are just like Bone layers, except they will only display one of their sub-layers at a time. Switch layers are an excellent way to perform lip-sync animation. Which sub-layer gets displayed is controlled by a switch data file. You can create this data file by hand, or better yet, use a lip-syncing program like Papagayo. See "Switch Layers" on page 99 for more information.
- ***Audio Layers*** allow you to add a sound file to your project. When adding an audio layer you will be prompted to select an audio file.

Vector Layers

Vector layers are the most common layer in Anime Studio projects. Artwork that you create in Anime Studio is always contained in a vector layer. Tools are available for drawing and editing curves, setting up fills and outlines, and connecting your drawings to bones.



Vector Layers

The tools available for working with vector layers essentially make up a 2D drawing program. You can draw lines and curves, re-shape existing curves, and manipulate objects in various ways. There are a couple ways that Anime Studio differs from other drawing programs. First, everything you draw in Anime Studio is a set of points and curves. In many programs, when you draw a circle, you get a circle object, or you may type some text to create a text object. In Anime Studio, once you've created the circle or the text, there's no difference between them whatsoever - they're both collections of curves. One happens to be in the shape of a circle, and the other in the shape of some There are advantages in treating all objects the same: first, you never have to worry about what type of object you're working with - the answer is always the same: a set of points and curves. The other advantage is that any operation you can perform on hand-drawn curves can be performed on text, or a circle, or whatever.

The other feature of Anime Studio's drawing mode that is different from many other drawing programs is the concept of "welding". In Anime Studio, two points can be "welded" together into a single point. In fact, any number of points can be welded together. When points are welded together, moving one of them moves them all, along with any curves that pass through that point. This is particularly useful when you start to animate objects. For example, if you want to move a character's nose, then welding it to the face might not be a bad idea. That way, however you distort the nose or the face, they'll always stay connected.

Layer Types

Image Layers

Image layers are a way of importing artwork into Anime Studio that was created in other programs. Any program that can produce image files can be used together with Anime Studio this way. For example, a painting program, photo editor, or 3D modeling program can produce images that can be used in an Anime Studio image layer. You can't edit the pixels of one of these images in Anime Studio, but you can move, resize and rotate image layers, and attach them to skeletons for more complex animation.

Image Layers

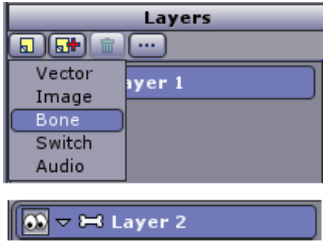
The best image format to use with Anime Studio is PNG. PNG files have high quality, good compression, and support full alpha channels for transparency effects. Although PNG is the preferred format for use with Anime Studio, you can also use JPEG, BMP, Targa, or GIF images.

Image layers can also be used to bring external movies into Anime Studio. Instead of selecting a still image, select a movie file when creating a new image layer. Anime Studio can import QuickTime (Windows and Mac OS) or AVI (Windows only) movies as image layers. When importing a movie file, Anime Studio will use the movie's alpha channel (if present) to composite the movie with other elements in the scene.

Bone Layers

Bone layers are similar to Group layers - they can both group together multiple sub-layers that can then be manipulated as a single object.

However, bone layers have an additional feature: In a bone layer, you can set up a skeleton that can be used to manipulate your artwork. A skeleton is exactly what it sounds like - an internal structure that can move the outer, visible portion of your artwork.



Bone Layers

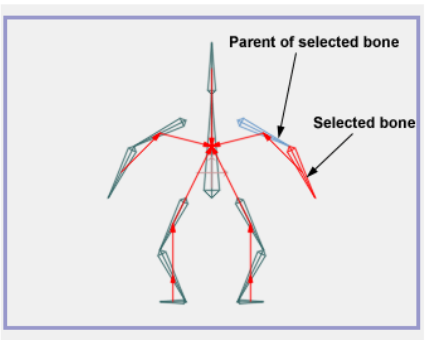
Setting up bones is sort of a pre-animation phase. You don't draw shapes in Bone layers, you set up controls that will help you animate later on. The purpose of setting up bones is exactly what you might think: creating a rigid skeleton inside your drawing. Later on, during animation, when you want to move an object, bones make the job easy. By moving a single bone in the arm of a character, for example, the whole arm will move with it. Around the elbow, the drawing of the arm will bend and stay smooth (as long as the bones were set up well with the Bone editing tools).

Bones by themselves don't really do much of anything: you can move them around, but they're invisible in the final Anime Studio output. To really make use of bones, they need to be attached to objects in other layers. This process is covered in "Bones" on page 34, and also "Bone

Tools" on page 129.

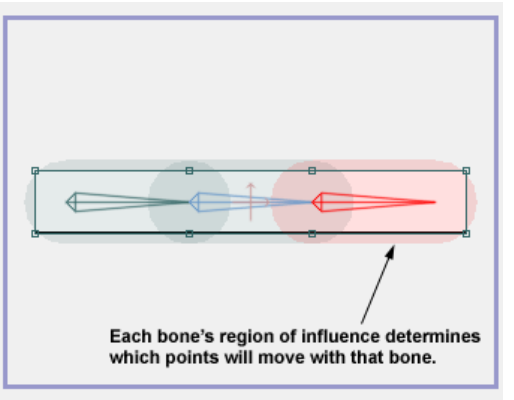
When you create a skeleton out of a group of bones, the bones have a hierarchical relationship. Each bone has a single parent (or maybe no parent at all, in which case it's called a root bone), and each bone may have multiple children. The relationship between parent and children is that when a parent bone is moved, all of its children move with it. When a child bone is moved however, it's parent remains unchanged.

Below is a picture of a skeleton created in Anime Studio. Red arrows have been added that point from each bone to its parent (the spine has no parent and is referred to as the root of the skeleton). Note that the currently selected bone is highlighted in red, and its parent (if it has one) is highlighted in blue, as shown below.



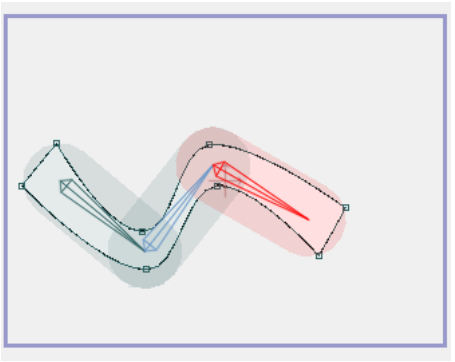
A skeleton hierarchy.

When you use bones with a vector layer, you need to consider how the bones and curve control points will interact. When a bone moves, it moves the points around it as well. Each bone has a region of influence (which you can adjust). Points move mostly with the bone whose region of influence they fall within, although other bones can still have an effect on them. Below is a picture of some points and bones. Notice the region of influence around each bone. The second picture shows the same object after the bones have been moved. Notice how the points follow the bones according to regions of influence (and how the curves pass smoothly through the points, wherever they move to).



A bone and vector setup

Layer Types



Moving bones moves the curve control points

Switch Layers

Switch layers are used to group together multiple layers, much like Group layers. However, switch layers have an interesting twist: only one of their sub-layers can be displayed at a time.

Switch Layers

One reason you might want to do this is for lip-sync animation. In this case, each of the sub-layers would correspond to a mouth shape for a particular sound ("A", "O", "TH", etc.). To control which sub-layer gets displayed at which frame in an animation, you can to assign a "switch data file" to the switch layer. An excellent way to create this data file is by using a lip-sync program. A great (and free!) lip-sync program is Papagayo.

You can also create a switch data file by hand. To do this, the data file should look like this:

```
MohoSwitch1
1 A
2 A
10 B
22 A
37 C
40 C
```

- The first line is a header that just tells Anime Studio that the file is a switch data file.
- The following lines contain two items each:
  - the first item is a keyframe.
  - The second item is the name of one of the switch group's sub-layers. (In this example, the switch layer should have three sub-layers, named "A", "B", and "C".)

If you make changes to the switch data file outside of Anime Studio, and you want to incorporate those changes, you will need to re-load the data file. To do this, double-click the Switch layer in the Layers panel, and in the dialog that opens up, go to the Switch tab, press "Source Data" and re-select the data file.

You don't have to use a data file to work with Switch layers - you can also control them manually from within Anime Studio. To control which sub-layer is displayed at any frame in your animation, just right-click on the Switch layer in the Layers panel. A pop-up menu will appear that lets you choose which sub-layer to display.

Anime Studio includes several sample mouth sets for doing lip-sync with Papagayo - take a look at those files to see how a switch layer should be set up. Also, check out the lip-sync tutorials included in this manual.

Switch layers have a feature that allows for "smooth" switching. To use this feature, all the sub-layers need to be Vector layers, and they need to have the same number of control points. Then, when switching, Anime Studio can smoothly transition between sub-layers. To enable this feature, turn on "Interpolate sub-layers" in the Switch layer's properties dialog. An example of using this feature is included in one of the mouth sets mentioned above.

Layer Types

Finally, switch layers can be set up with skeletons, just like bone layers. More accurately, a switch layer ***is*** a bone layer, just a specialized one. If you add bones to a switch layer, you can use them (for example) to change the shape of a mouth as it speaks, bending it into a smile or a frown.

Don't feel restricted to lip-sync animation with switch layers. They have a lot of potential uses (controlling eyes, syncing to music & sound effects, switching between different hand gestures, etc.) - get creative!

Audio Layers

Audio layers allow you to add an audio file to your project. You will be prompted to select a file after choosing this layer type. A graphic representation of the audio file appears in the timeline after the file is selected.

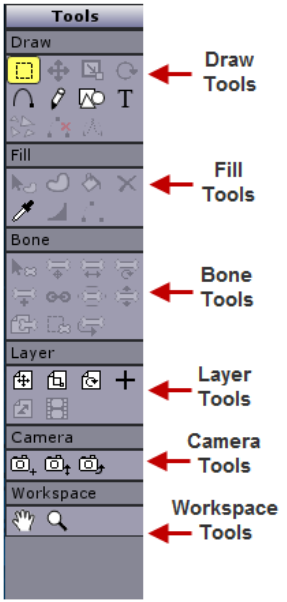
Audio Layers

Tool Groups

Tool Overview

Anime Studio's tool categories

Anime Studio's toolbar window holds all the tools you can use in the main working area. The tools are grouped into five categories: Draw, Fill, Bone, Layer, Camera, and Workspace. These groupings are illustrated below:



Anime Studio's tool groups.

Each of the tool groups has a section in this manual describing its tools in detail. As an overview, here is the role of each tool group:

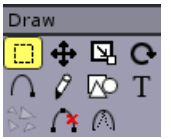
- ***Draw Tools*** are used to draw and modify your artwork in vector layers. See "Draw Tools" on page 103 for more information.
- ***Fill Tools*** are used to apply color to your drawings. These tools are also only used in vector layers. See "Fill Tools" on page 116 for more information.
- ***Bone Tools*** are used in bone layers to create and animate skeleton structures. In other layers, these tools let you assign objects to bones in preparation for animation. See "Bone Tools" on page 129 for more information.
- ***Layer Tools*** are used to animate entire layers. These tools work with any layer type in Anime Studio. See "Layer Tools" on page 136 for more information.
- ***Camera Tools*** are used to control the virtual camera. These tools can be used with any layer type in Anime Studio. When you move the camera, it actually affects your view of every layer in the project. See "Camera Tools" on page 147 for more information.
- ***Workspace Tools*** are used to change your view of the project. They don't actually modify the project - they just help you focus in on a specific area to help you work on specific areas. See "Workspace Tools" on page 149 for more information.

Draw Tools

Draw tools are used to draw and modify vector artwork. The following tools are available when you're working with a vector layer. Most of these tools are used by selecting them from the toolbar then clicking and dragging in the working area of the main window - a few are used simply by clicking on them, and this is noted below. If you hold the mouse over a tool, a tooltip will appear with the name of the tool if you need a quick reminder. Also, most tools have a shortcut key that can be used to activate them. If a tool has such a shortcut, this will show up in the tooltip as well.

If a tool has the following symbol next to it: , then it can be used for animation - using the tool at different frames in the timeline will cause the object you adjust to change over time.

Select Points



Select Points

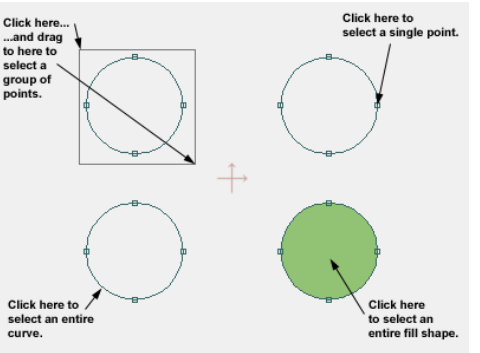
Select Points options

Select Points Tool Options

- ***Select Group***: Used to select a group that was previously created with the Select Points tool.
- ***Text Field***: Assigns a name to the currently selected group of points.
- ***Create***: Creates a group from the selected points.
- ***Delete***: Deletes the currently selected group from the selection list.
- ***Lasso Mode***: When checked, allows you to draw a lasso around the points you want to select. When unchecked, selects a rectangular area.
- ***Flip Horizontally***: Click this button to flip horizontally.
- ***Flip Vertically***: Click this button to flip vertically.

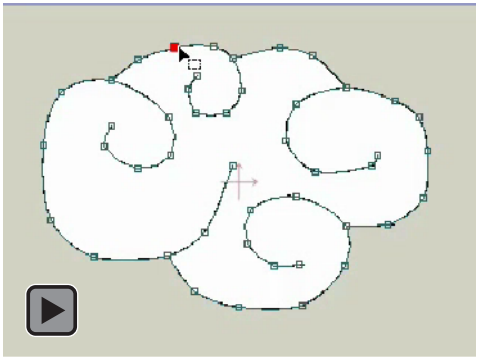
Using the Select Points Tool

Many of the following tools work only on the currently selected points. This is the tool you use to select/de-select points. This tool can be used in a few different ways. The most basic way to select points is to drag a rectangle around them. Also, using this tool you can click on a single point to select it. The third method of selection is to click on a curve to select the entire curve. Finally, clicking on a filled-in area will select an entire object. Each of these selection methods is illustrated below:


Click here...
...and drag to here to select a group of points.
Click here to select a single point.
Click here to select an entire curve.
Click here to select an entire fill shape.

Selection methods.

Below is a short movie clip showing the different ways to select points using the Select Points tool.



Different methods of point selection.

Modifier keys:

- By holding the **Shift** key, you can extend a selection. Otherwise, you will always start a new selection when using this tool.
- Holding the **Alt** key will prevent this tool from selecting curves or shapes when you click on them (sometimes when things get crowded it's hard not to click on a shape by accident).
- If you hold down the **Ctrl** key, this tool will work in "lasso" style. (You can also activate lasso style selection by turning on "Lasso mode" in the tool options area.)

The selection commands in the Edit menu are also very useful for managing selections. These are described in "Anime Studio Menus" on page 151.

The currently selected points may be deleted by pressing the **Delete** or **Backspace** keys.

Translate Points

Translate Points

Translate Points options.

Translate Points Tool Options

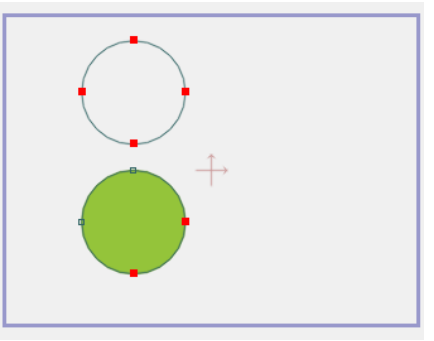
- ***Select Group***: Used to select a group that was previously created with the Select Points tool.
- ***Position X***: Allows you to numerically enter a value for the X coordinate.
- ***Position Y***: Allows you to numerically enter a value for the Y coordinate.

- ***Reset***: If pressed at Frame 0, resets a layer back to its default value. If pressed at any other frame, resets the layer to the value or values set at frame 0.
- ***Auto Weld***: When checked, automatically welds a new point to an existing point. The existing point is highlighted when the mouse hovers over a point that can be welded.
- ***Auto Fill***: When checked, automatically fills a closed shape when you create it.
- ***Flip Horizontally***: Click this button to flip horizontally.
- ***Flip Vertically***: Click this button to flip vertically.

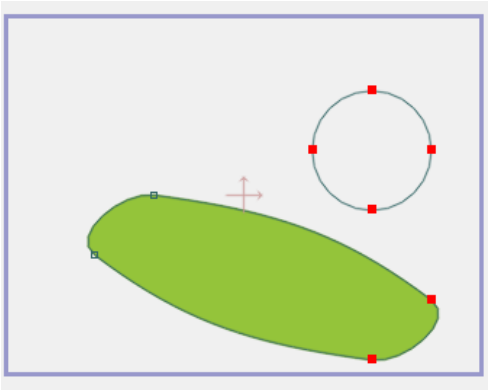
Using the Translate Points Tool

The Translate Points tool is used to move a group of selected points. It operates only on the currently selected points, unless fewer than two points are selected - then it operates on the nearest point to where you clicked.

It's important to note that this tool, like most of the Anime Studio drawing tools, modifies points, not curves. If you select all the points in an object and use this tool, the entire object will move. However, if you only select some of the points, then you'll end up distorting the object (which can be very useful). In the pictures below, the selected points are highlighted in red. Notice the effect of using the Translate Points tool on these points.



Top circle fully selected. Bottom circle partially selected.

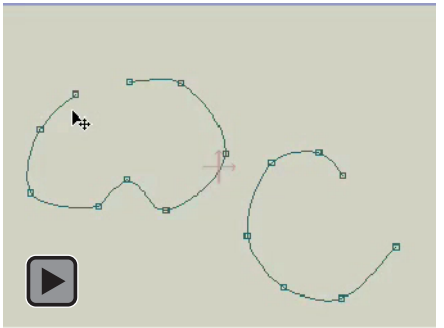


After translation.

Holding the **Shift** key while using the Translate Points tool will constrain the selected points to only move vertically or horizontally.

The Translate Points tool can also be used in conjunction with Anime Studio's welding feature. To weld two points together, use the Translate Points tool to drag one point on top of another (you must drag just one point to weld, not a group of points). While dragging the first point on top of the second, press the spacebar to weld them together into one point.

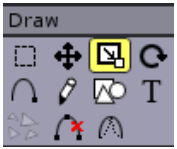
If the "Auto-weld" option is turned on in the tool options area, Anime Studio can automatically weld points for you. Only the endpoint of a curve can be automatically welded. To automatically weld the endpoint of a curve, just drag it on top of another point and let go of the mouse. Below is a movie demonstrating auto-welding. After dragging each endpoint into place, it becomes welded to the existing point, and the two can be moved around



Using Translate Points and auto-weld.

Nudging: When this tool is active, you can "nudge" the selected point(s) by small increments by holding down the **Ctrl** key and pressing the arrow keys. Hold down **Shift** in addition to **Ctrl** to nudge the point(s) by a greater increment.

Scale Points



Scale Points

Scale Points options

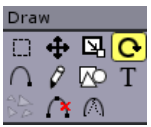
Scale Points Tool Options

- ***Select Group***: Used to select a group that was previously created with the Select Points tool.
- ***Scale X***: Allows you to enter a numeric value for scaling along the X axis.
- ***Scale Y***: Allows you to enter a numeric value for scaling along the Y axis.
- ***Modify***: Click to apply the values entered in the Scale X and Scale Y fields
- ***Reset***: If pressed at Frame 0, resets a layer back to its default value. If pressed at any other frame, resets the layer to the value or values set at frame 0.
- ***Flip Horizontally***: Click this button to flip horizontally.
- ***Flip Vertically***: Click this button to flip vertically.

Using the Scale Points Tool

The Scale Points tool operates on the currently selected group of points. Two or more points must be selected to use this tool. When this tool is active, a red box will appear around the currently selected group of points. The handles around the edges of this box allow you to resize the points. Drag a corner handle in and out to scale the points while maintaining their proportions. Drag one of the side handles to change the horizontal scale, or the top or bottom handle to change the vertical scale. If you hold the **Alt** key while dragging a side handle, Anime Studio will resize the selected points in such a way to maintain the overall volume of the object - this can be useful for squash and stretch.

Rotate Points



Rotate Points

Rotate Points Options

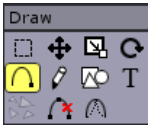
Rotate Points Tool Options

- ***Select Group***: Used to select a group that was previously created with the Select Points tool.
- ***Rotation***: Allows you to enter a numerical value for rotation.
- ***Modify***: Click to apply the value entered in the Rotation field
- ***Reset***: If pressed at Frame 0, resets a layer back to its default value. If pressed at any other frame, resets the layer to the value or values set at frame 0.
- ***Flip Horizontally***: Click this button to flip horizontally.
- ***Flip Vertically***: Click this button to flip vertically.

Using the Rotate Points Tool

The Rotate Points tool also operates on the currently selected group of points. Two or more points must be selected to use this tool. Click near the outer boundary of the selected group of points. Next, drag the mouse in a circle around the selection to rotate the points. Holding the **Shift** key while using the Rotate tool will constrain the rotation to 45 degree increments.

Add Point



Add Point

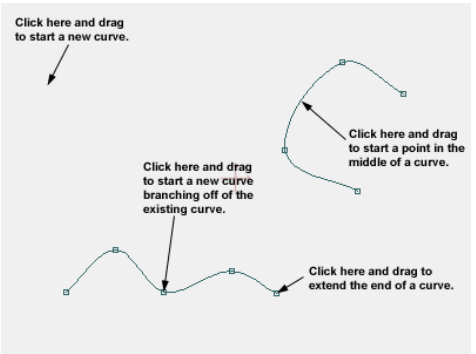
Add Point Options

Add Point Tool Options

- ***Select Group***: Used to select a group that was previously created with the Select Points tool.
- ***Auto Weld***: When checked, automatically welds a new point to an existing point. The existing point is highlighted when the mouse hovers over a point that can be welded.
- ***Auto Fill***: When checked, automatically fills a closed shape when you create it.
- ***Sharp corners:*** When checked, creates sharp corners when changing the angle of a line. When unchecked, creates smooth transitions when changing the angle

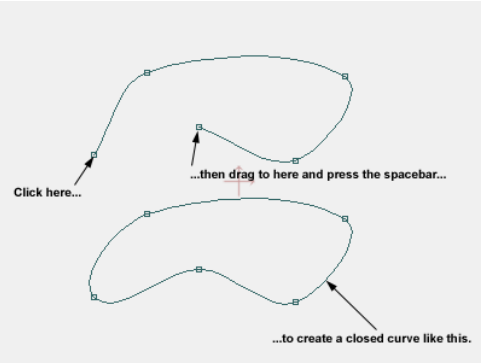
Using the Add Point Tool

The Add Point tool is what you use to draw most curves in Anime Studio. Just click and drag in the working area of the main window to create a new curve segment. There are four variations to using the Add Point tool - they differ in where the original click takes place. The first way to use this tool is to click in empty space and drag - this will start a new curve. The second technique is to click on the end of an existing curve to add another segment to that curve. Third, click on a curve segment to add a point there, then drag it to the final desired position. Finally, click on a curve midpoint to add a new branching curve that is welded to the existing point. Each of these uses of the Add Point tool is shown below.


Click here and drag to start a new curve.
Click here and drag to start a point in the middle of a curve.
Click here and drag to start a new curve branching off of the existing curve.
Click here and drag to extend the end of a curve.

Uses of the Add Point tool.

The Add Point tool can also be used to weld two points. Click and drag in one of the ways described above to add a new point. Drag the new point on top of an existing point, and press the spacebar before releasing the mouse. An example is shown below. (This works just like the Translate Points tool, above. Read about that tool for more details on welding.)



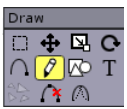
Closing a curve.

To prevent the Add Point tool from adding on to an existing curve regardless of where you click, hold the **Alt** key to force the tool to start a new line segment.

The movie below demonstrates the Add Point tool. Notice how clicking on different parts of an existing curve causes the new point to be added in different ways.

Using the Add Point tool.

Freehand

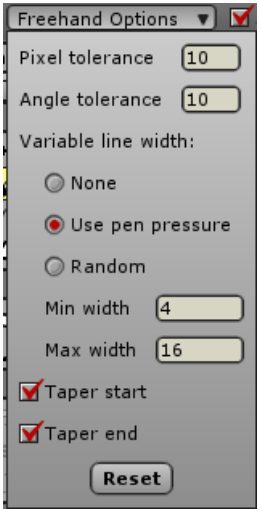


Freehand

Freehand Options

Freehand Tool Options

- ***Freehand Options***: Click this button to display the following options
  - ***Pixel Tolerance***: The minimum distance between points when drawing a curve.
  - ***Angle Tolerance***: Removes points when the angle between points is less than the value entered.
  - ***Variable line width***: When set to None, does not vary line width. You can also vary line width based on pen pressure, or randomly. The line width will vary between the minimum and maximum width settings that you specify.
  - ***Taper Start***: When checked, tapers the start of the line.
  - ***Taper End***: When checked, tapers the end of the line.
  - ***Reset***: If pressed at Frame 0, resets a layer back to its default value. If pressed at any other frame, resets the layer to the value or values set at frame 0.



- ***Auto Weld***: When checked, automatically welds a new point to an existing point. The existing point is highlighted when the mouse hovers over a point that can be welded.
- ***Auto Fill***: When checked, automatically fills a closed shape when you create it.
- ***Auto-stroke***: When checked, automatically creates a stroke around the shape that you create. Uncheck this option to create a shape that has no outline.
- ***Auto close***: When unchecked, closes a shape when the cursor is released over the beginning of the shape. When checked, connects the shape from the current position to the start point when you release the mouse button.

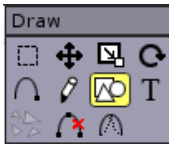
Using the Freehand Tool

The Freehand tool lets you draw complex shapes by just dragging the mouse around. You can adjust the sensitivity of the Freehand tool in the tool options area when this tool is active. In the "Freehand Options" popup there are two adjustment parameters for this tool. The first is the minimum distance between points when drawing a curve with the Freehand tool. This setting is changed in the text box labeled "Pixel tolerance".

The second adjustment tells Anime Studio to simplify a freehand curve by removing unnecessary points. This is controlled in the text box labeled "Angle tolerance". Points that deviate from the curve by less than that angle will be automatically removed. To preserve every single point created by the Freehand tool, set the angle tolerance to 0.

After using the Freehand tool, you will often want to go back and use the Translate Points tool to modify the result, delete unnecessary points, and weld points together. If you have a drawing tablet, the Freehand tool can also use the pen pressure from your tablet to control the thickness of the lines you draw (Windows and Mac OS only).

Draw Shape



Draw Shape

Draw Shape Options

Draw Shape Tool Options

- ***Auto Fill***: When checked, automatically fills a closed shape when you create it.
- ***Auto-stroke***: When checked, automatically creates a stroke around the shape that you create. Uncheck this option to create a shape that has no outline.

Rectangle

Rectangle

The Rectangle tool is a shortcut for creating a rectangular shape. Just click and drag to draw a rectangle. Hold the **Shift** key to constrain the shape to a square. Hold the **Alt** key to make the click point the center of the rectangle, instead of one of its corners. There's nothing special about rectangles created with this tool - they're just four points and four curve segments and can be manipulated just like anything else. You could create the same shape with the Add Point tool, but for a simple rectangle, this tool is quicker.

Oval

Oval

The Oval tool is a shortcut for creating an oval shape. Just click and drag to draw an oval. Hold the **Shift** key to constrain the shape to a circle. Hold the **Alt** key to make the click point the center of the circle. There's nothing special about ovals created with this tool - they're just four points and four curve segments and can be manipulated just like anything else. You could create the same shape with the Add Point tool, but for a simple oval, this tool is quicker.

Triangles

Triangles

The Triangle tool is a shortcut for creating a triangle shape. Just click and drag to draw a triangle. Hold the **Shift** key to constrain the shape to an equilateral triangle.

Stars

Stars

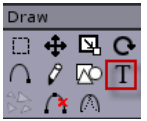
The Stars tool is a shortcut for creating a star shape. Just click and drag to draw a star. Hold the **Shift** key to constrain the shape to a star with five equal points.

Spirals

Spirals

Click and drag to draw a spiral shape. The number of windings increase as you drag outward. By default the spiral radiates in a clockwise direction from the center. Press the **Alt** key to create a counter-clockwise spiral.

Insert Text



Insert Text

Insert Text Options

Using the Insert Text Tool

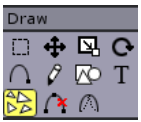
To create a text object, just choose the **Draw > Insert Text...** menu command. Type in the text you want, select a font, and click OK. The text will appear in your document, pre-filled with the current fill color and style, and it can be resized and positioned just like any other object.

Remember: there's nothing special about a text object. It can be

manipulated just like anything else. This includes using any of the drawing tools to distort its shape, or to add new points in the middle of a character. This also means that in order to move or rotate a text object, you need to select all the points in the object. This is easy to do using the Select Points tool - just click on the filled in area of the text to select all of it.

Scatter Brush

The Scatter Brush allows you to spray shapes into your scene. There are a number of preset shapes, or you can also copy any shape to your clipboard and spray multiple copies of that shape into your scene.



Scatter Brush

Insert Text Options

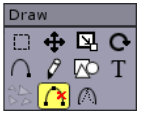
Scatter Brush Tool Options

- ***Scatter Brush Options***: Click this button to display the following options
  - ***Angle Jitter***: Specifies the maximum amount of angle variation in the objects that you spray.
  - ***Spacing***: Specifies the minimum amount of space between the objects that you spray.
  - ***Color Jitter***: Specifies the maximum amount of color variation for the objects that you spray.
  - ***Flip X:*** Check this option to flip the objects being sprayed along the X axis.
  - ***Flip Y:*** Check this option to flip the objects being sprayed along the Y axis.
- ***Preset Menu:*** Click the Preset menu to choose from a number of different presets that you can spray into your scene. If you choose Use Clipboard, the Scatter Brush tool sprays the contents of your clipboard into the scene.
- ***Min Width*** and ***Max Width***: Sets the minimum and maximum width of the objects that you spray. If you want all of the objects to be the same size, set both values the same. Higher values create larger objects.

Using the Scatter Brush Tool

Copy a vector object into your clipboard, or select one of the preset options from the Preset menu. Choose the vector layer that you want to paint into. Set the Min and Max Width settings appropriately for the scale of the objects. Set other options in the Scatter Brush Options panel if you want to increase or decrease variation in the angle, spacing, or color of the objects you are spraying.

Delete Edge

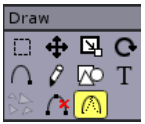


Delete Edge

Using the Delete Edge Tool

It's easy to delete points - just select them and press backspace or delete. However, sometimes you may want keep two points, but break the curve connecting them. To do this, use the Delete Edge tool. Just use it to click on the curve segment you want to delete and it will disappear. Note: If the edge you delete makes up part of the outline of a fill shape, that shape will also be deleted.

Curvature



Curvature

Curvature Options

Curvature Tool Options

- ***Select Group***: Used to select a group that was previously created with the Select Points tool.
- ***Peak***: Creates a peaked (or hard) transition between the curves at the point that you click.
- ***Smooth***: Smooths the transition between the curves at the point that you click.

Using the Curvature Tool

This tool works on the currently selected points, or on the nearest point if less than two points are selected. It adjusts the level of smoothness of the curves passing through the selected points. Drag to the left to make the curves less smooth, and drag to the right to make the curves rounder.

Fill Tools

Using the Fill tools for vector layers, you take the drawings you created with the Draw tools, and you tell Anime Studio which areas should be filled with color, where outlines should be placed, and what fill and line styles to use.

The drawings created with Draw tools are only guides. As far as Anime Studio is concerned, they're invisible and they won't show up in the final rendered output. That's where Fill tools come in. Draw tools define the ***shape*** of objects, while Fill tools define the ***appearance*** of those objects. Of course, you're always free to switch back and forth between any of Anime Studio's editing tools at any time.

To define a region to be filled, you must first select all the points along its boundary. That's what defines a fill region - the set of points along its outer edge. We'll take a look at some examples later. You can also create outlines using these tools. Outlines are less restrictive than fills - an outline is not a set of points along an outer boundary. Instead, an outline can be any set of points you choose. The curve segments between these selected points will form the outline.

Fills and outlines are stacked on top of each other in the order you create them. This determines which fill or outline will be visible when two or more overlap. There are tools that allow you to change the stacking order of fills and outlines, but you'll learn that you can save yourself a lot of time by planning ahead and creating fills in the proper order to begin with.

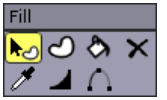
Color Picking

If the **Select Shape** or **Create Shape** tools are active and a shape is selected, you can quickly set the shape's color by picking it from another shape in the current layer. Just hold down the **Alt** key and click on the shape you want to copy the color from. The color (and style) will instantly be applied to the currently selected shape.

You can also "push" a shape's color and style onto other shapes. If you hold down **Alt** + **Ctrl** and click on a second shape, the selected shape's color will be "pushed" onto the shape you click on. This is an easy way to propagate one shape's color and style onto several other shapes in the same layer.

The following Fill tools are available.

Select Shape



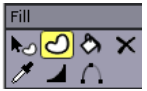
Select Shape tool.

Using the Tool

This tool is used to select an existing shape - either a fill or an outline. Just click on the desired shape and it will be selected. At that point, you can press the **Delete** or **Backspace** keys to delete the shape, adjust its properties in the Style Window (see "Style Window" on page 188), or change its stacking order using the fill modifiers described below.

After clicking on a shape to select it, you then have the option to select shapes lower in the stacking order. Just hold down the **Ctrl** key and press the down arrow key to select the next shape lower down at the point you clicked the mouse. Hold **Ctrl** and press the up arrow key to select the next shape higher in the stacking order at that same point.

Create Shape



Create Shape

Create Shape Options

Tool Options

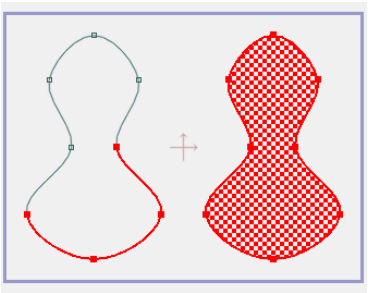
- ***Select Group***: Used to select a group that was previously created with the Select Points tool.
- ***Create Shape:*** Press the Create Shape button to complete the shape. This is the same as pressing the Spacebar after your selection is made.
- ***Lasso Mode:*** The Create Shape tool selects a rectangular area by default. Check this option to select points by drawing a lasso around the desired area.

Using the Tool

The Create Shape tool is used to select a region to be filled with color, or a set of edges to be drawn as an outline. It operates exactly like the Select Points tool described in "Draw Tools" on page 103. Using the Create Shape tool, select all the points that form the outer border of the shape you wish to create. If you select a set of edges that completes an enclosed shape, a highlighted checkerboard will show you the extent of the region you are creating. Otherwise, you will just see a highlighted outline on the selected edges.

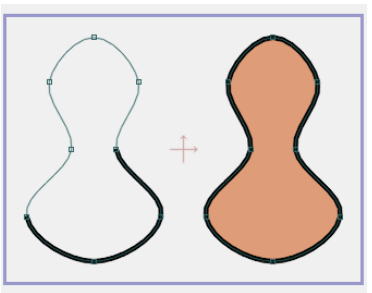
When you have the desired region selected, press the spacebar or press the Create Shape button in the status bar to actually create a shape from the selected edges. The Style Window (see "Style Window" on page 188) can now be used to choose the shape's color, line width, style, etc. ***This is a very important step - until you press the spacebar or use the Create Shape button, you are only preparing the selection. A shape is only created when the spacebar or button is pressed.***

The picture below shows a selection in progress using the Create Shape tool. Note that the figure on the left is not filled with a checkerboard because its border points are not all selected. The checkerboard area indicates the region that would be filled if the user hit the spacebar at this particular moment. The left figure would only receive a partial outline and no fill, since then entire border has not been selected.



Selecting the curves to make up a shape.

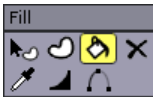
The next figure shows the result of pressing the spacebar to actually create the two shapes that were being prepared in the figure above.



The two resulting shapes.

After creating a shape, if you decide that you only want a fill, and not an outline, you can un-check the "Enable outline" box in the Style window. Similarly, un-check the "Enable fill" box in the Style window to make your shape have only an outline, and no fill color.

Paint Bucket



Paint Bucket

Paint Bucket Options

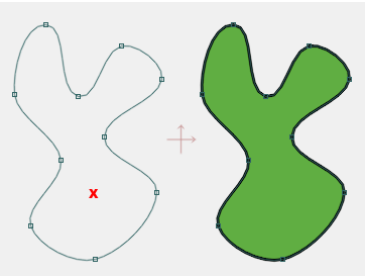
Tool Options

- ***Fill***: Select this option to affect fill only.
- ***Stroke***: Select this option to affect stroke only.
- ***Both***: Select this option to affect both fill and stroke.

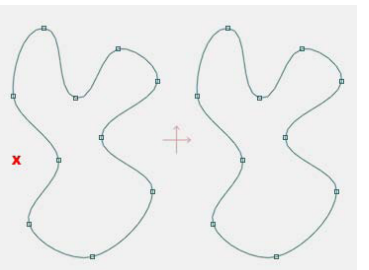
Using the Tool

The Paint Bucket tool is used to fill a closed region with color. Just click inside a closed shape to fill it with the current combination of colors and styles. This can make it much easier and quicker to fill shapes than with the Create Shape tool, but keep in mind you're still working with the same requirements - a shape must be completely closed in order to be filled. Also, the entire shape must be visible onscreen when you use the Paint Bucket to fill it - if part of the shape is cut off on the edge of the editing window, it can't be filled. (You can always change the view to fit a shape on-screeen before filling it.)

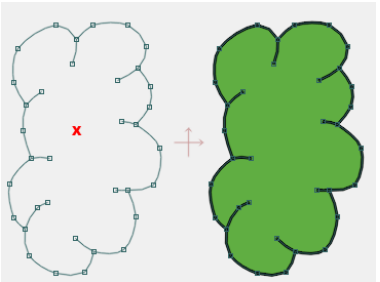
The paint bucket tool works by temporarily filling the region you click in with a test color. Any edge that touches this test color is considered selected, and becomes part of the final shape. If you hold the mouse button down and drag the mouse around, you can get a preview of how the fill will look when you release the mouse button. Below are some examples of sets of curves in Anime Studio, where the user might click with the Paint Bucket tool, and the resulting fills. In each case, the shape on the left is the starting shape, the red X indicates the point where the user clicked with the Paint Bucket tool, and the result is the shape on the right:



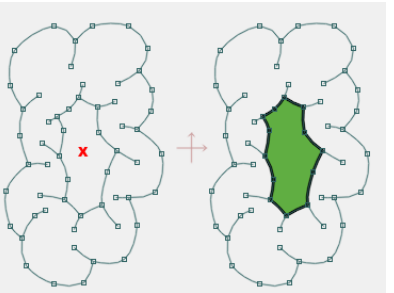
Filling a basic closed outline.



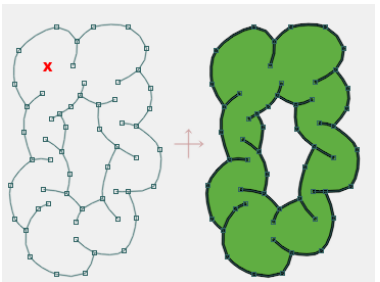
Clicking outside a closed outline (nothing happens - no fill).



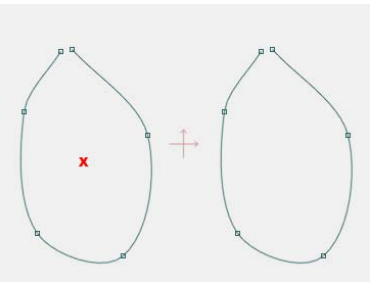
A more complex shape. There are some dead-end curves, but the overall shape is still closed.



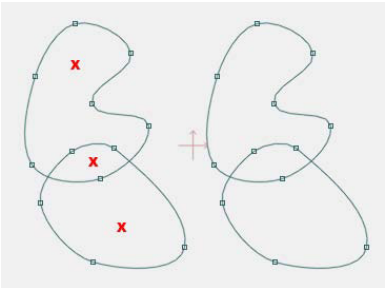
Clicking inside the hole fills just the hole.



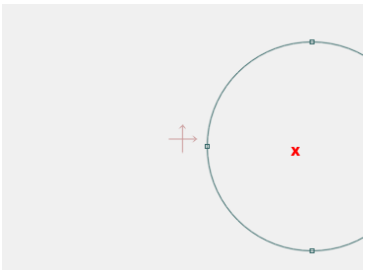
A shape with a hole in it.



The shape is not closed (close, but not good enough) - no fill is created.



No fill will be created by any of these clicks. The paint bucket cannot fill an entire enclosed outline in any of these cases.



Clicking here will not fill the circle, since some of it is off-screen. The paint bucket can only fill shapes that are entirely on-screen.

Delete Shape

Delete Shape

Using the Tool

Using this tool, click on a fill or outline to delete it from the project. Remember, in Anime Studio, the ***shape*** of an object is separate from its ***appearance***. If you use this tool to delete a fill, the underlying points and curves will remain. If you want to delete those as well, go back to the Draw tools to work with the points and curves.

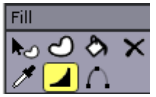
Eyedropper

Eyedropper

Using the Tool

To use the Eyedropper, click on a shape to copy its parameters. Hold the Alt key to push the current color.

Line Width



Line Width

Line Width Options

Tool Options

- ***Select Group***: Used to select a group that was previously created with the Select Points tool.
- ***Width***: Allows you to enter a numerical value for the line width

Using the Tool

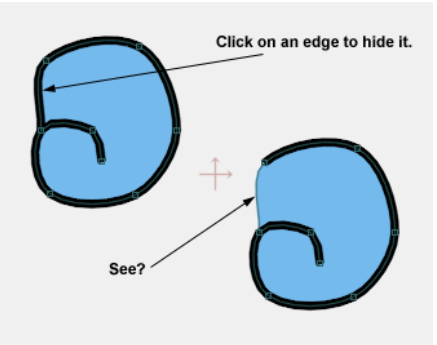
The Line Width tool is used to adjust the width of a line as it passes through a particular point. Using this tool, you can create lines that taper at the ends, get thinner in the middle, or change width several times along their length. To use it, just click on the point you want to adjust, and drag the mouse left and right to adjust line thickness. (Be sure you first either set up an outline through the point, or a fill shape with a non-zero line width - otherwise this tool won't do you much good.) You can adjust more than one point at a time by selecting multiple points with the Select Points tool from the Draw tool group.

Hide Edge

Hide Edge

Using the Tool

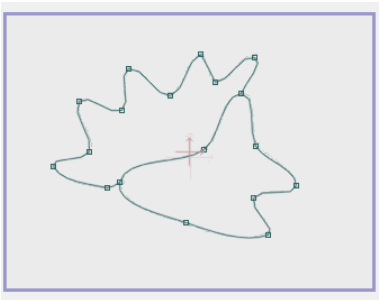
Sometimes, you will have the need to create a fill shape with only a partial outline. The Hide Edge tool makes it easy to accomplish this. After creating the fill shape and setting the desired line width, simply click on the edge(s) that you want to hide - those edges will simply disappear from the outline, without affecting the fill. Below is a before and after example:



The Hide Edge tool in action.

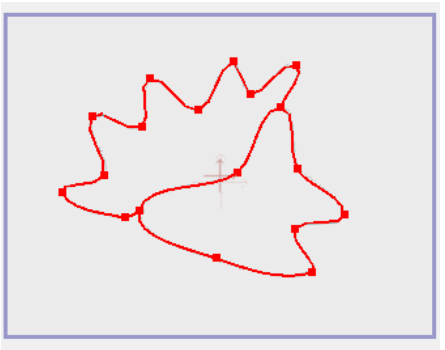
Complex Fill Shapes

When creating fills, Anime Studio tries to be clever and ignore selected parts that can't possibly be part of the outline of a fill, such as points on dead-end curves. However, there are times when Anime Studio needs a little help from you. As an example, take the shape below:

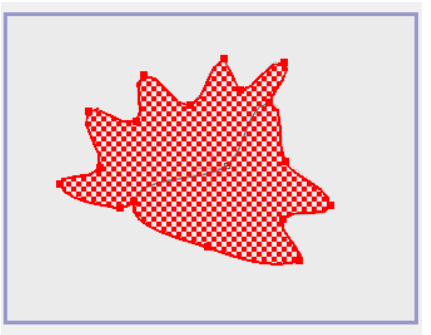


A complex shape - two curves welded together.

To fill this shape with color, your first thought might be to select the entire group of points. Unfortunately, Anime Studio recognizes this as a shape that can't be filled, and will only allow you to create an outline:



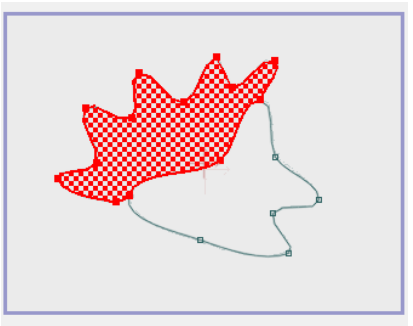
A shape that can't be filled.



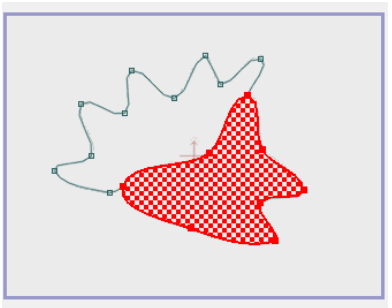
A selection that can be filled.

The reason for this is that a fill is defined by the points along its boundary. In this case, it's not obvious to Anime Studio which boundary you intended. Many times, Anime Studio can figure it out and provide you with the fill you were after, but in a case like this, you have to be more specific about what points define the boundary of the shape. The definition of a fill hasn't changed - but sometimes your intentions aren't as obvious to Anime Studio as they are to you. The following selection contains ***only*** the boundary points of the desired fill region - the points along the interior curve are not selected:

Here are two other examples of possible fills based on the same set of curves:



Alternate shape 1.

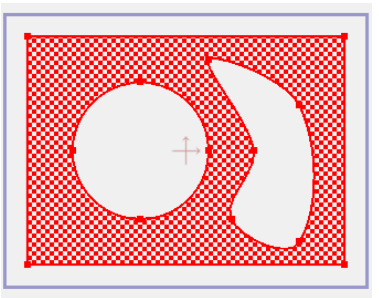


Alternate shape 2.

Remember, when a fill shape doesn't look right (or can't be filled at all), make sure that you've only selected the points along the fill's ***boundary***, and nothing else.

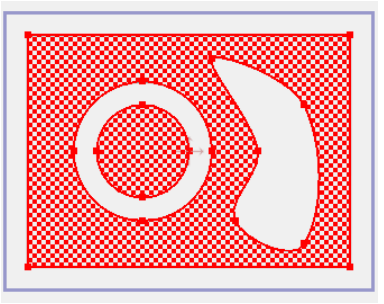
Compound Fills

Remember how a fill is defined: a fill is defined by the set of points along its boundary. With that in mind, let's talk about fills with holes. To create a fill shape with one or more holes inside it, just select the points along the edge of the hole as well as the points on the outer boundary. The picture below shows a selection made with the Create Shape tool. If only the four points of the rectangle had been selected, then the fill shape would have been a solid rectangle. However, by selecting the interior curves as well, we can create a shape with holes in it - it's simply a matter of defining more boundaries for the fill.



A compound fill.

The next picture shows a small variation on the one above. In this case, there's a smaller circle inside the first one. The rule is the same - we've just added more boundary curves to this fill.

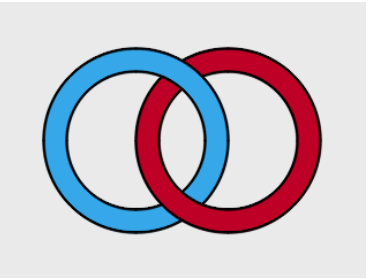


Another compound fill.

There's no limit to the kinds of shapes you can create this way. By adding more boundary curves, you can create more and more complex fills - feel free to experiment.

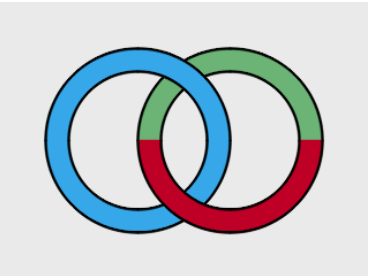
A Trick: Using Two Fills Instead of One

Sometimes you may want to create an object with parts that overlap in complex ways. Consider the image below:



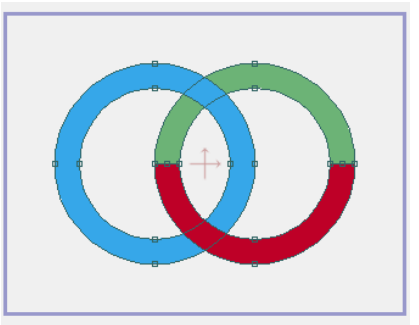
Two interlocking rings.

After the discussion about stacking order, is the red ring in front of or behind the blue one? Well, the answer isn't so simple. There is no way two objects could be arranged this way with simple stacking. (If Anime Studio were a 3D program, things would be very different.) The red ring is in fact two objects - one behind the blue ring, and one in front of it. The next image shows the same object, but colored differently so that the two parts of the red ring stand out.



The coloring shows three different shapes.

It takes a little more work to set up an object when you have to split it into two (or more) parts, but sometimes it's the only way to achieve a certain effect. The picture below shows the project in an Anime Studio window, so that you can see the arrangement of points and curves. Note how the ring on the right has some extra curves set up so that it can be split into two fills.



Point and curve arrangement.

This technique is also useful in animation, for when you want an object to bend backwards and overlap itself. Normally, this would cause the fill that defined the object to get seriously distorted, or even to break holes in itself. However, by building the object out of two or more parts and stacking them properly, you can achieve this type of effect with no problem.

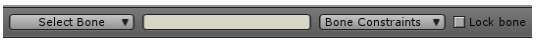
Bone Tools

Using skeletons to manipulate drawings

The following tools are available when working with Bone or Switch layers. If a tool has the following symbol next to it: , then it can be used for animation as well. In general, tools that are used for bone setup can only be used when the time is set to frame 0 - others can be used at any time.

Select Bone

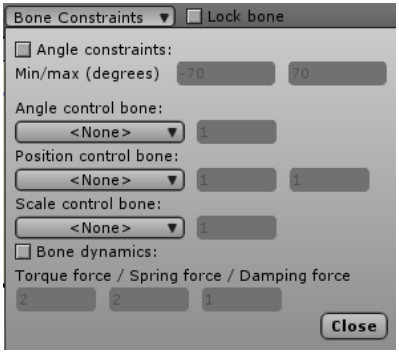
Select Bone



Select Bone Options

Tool Options

For detailed instructions and descriptions of the options in this dialog, refer to "Bones" on page 34.



Bone Constraints Options

Using the Tool

Using this tool, you can click on a bone to select it. You might want to select a bone in order to delete it (press the **Delete** or **Backspace** keys - all of its children will be deleted too). You also might want to select a bone in order to add new child bones to it. Click anywhere besides a bone to de-select all bones.

Translate Bone

Translate Bone

Translate Bone Options

Tool Options

- ***Select Bone***: Click this menu button to select a bone by name.
- ***Position X***: Allows you to numerically enter a value for the X coordinate.
- ***Position Y***: Allows you to numerically enter a value for the Y coordinate.
- ***Length***: Allows you to view or enter a numerical value for the length of the bone.
- ***Reset***: If pressed at Frame 0, resets a layer back to its default value. If pressed at any other frame, resets the layer to the value or values set at frame 0.

Tool Groups

Using the Tool

This tool (along with the Rotate Bone tool) is used to reposition bones after they've been created. If you've added a new bone in the wrong place, or you just want to move it later on, click and drag it with this tool. Clicking near the base of the bone will move its position, while clicking near the tip will move the tip around, changing the bone's length and direction. Note that if the bone has any child bones, they will be moved as well.

Holding the **Shift** key will cause the bone to only move horizontally or vertically relative to its parent (if you click near the base), or to point in a direction that is a multiple of 45 degrees (if you click near the tip).

If any objects in other layers have been bound to the bone, they will not move if the current frame is 0. At frame 0, you are modifying the bone layout - at later frames you are animating with this tool, and bound objects will move with the bone.

Nudging: When this tool is active, you can "nudge" the selected bone by small increments by holding down the **Ctrl** key and pressing the arrow keys. Hold down **Shift** in addition to **Ctrl** to nudge the bone by a greater increment.

Scale Bone

Scale Bone

Scale Bone Options

Tool Options

- ***Select Bone***: Click this menu button to select a bone by name.
- ***Scale***: Allows you to view or enter a numerical value for the length of the bone.
- ***Reset***: If pressed at Frame 0, resets a layer back to its default value. If pressed at any other frame, resets the layer to the value or values set at frame 0.

Using the Tool

The Scale Bone tool is used to change the length of a bone. This tool is only available during an animation, not at frame zero. To change the length of a bone at frame 0, use the Translate Bone tool and drag the tip of the bone.

Rotate Bone

Rotate Bone

Rotate Bone Options

Tool Options

- ***Select Bone***: Click this menu button to select a bone by name.
- ***Angle***: Allows you to view or enter a numerical value for the angle of the bone.
- ***Reset***: If pressed at Frame 0, resets a layer back to its default value. If pressed at any other frame, resets the layer to the value or values set at frame 0.

Using the Tool

The Rotate Bone tool is used to change the direction a bone is pointing in. Click the tip of a bone, and drag it in circles around its base to change its direction. Hold the **Shift** key to constrain the bone's direction to a multiple of 45 degrees.

Add Bone

Add Bone

Add Bone Options

Tool Options

- ***Select Bone***: Click this menu button to select a bone by name.
- ***Text Field***: Allows you to assign a name to the currently selected bone

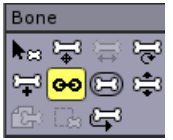
Using the Tool

Use this tool to add new bones to a skeleton. The location you click will be the base of the bone (the point it rotates about), and where you drag to will be the endpoint. If another bone is selected before you click and drag, it will be the parent of the new bone you create. Otherwise, the new bone will be parentless, a root bone.

Hold the **Shift** key to constrain the new bone to point in a direction that is a multiple of 45 degrees.

Note that bones don't have to be touching to have a parent-child relationship. In the example shown in "Bone Layers" on page 97, the upper arm bones are children of the spine, even though they are separated from it by a small distance. This will often be the case - arms should rotate about the shoulders, not the neck, even though they move when the spine moves.

Reparent Bone



Reparent Bone

Tool Options

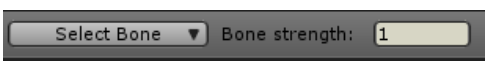
- ***Select Bone***: Click this menu button to select a bone by name.

Using the Tool

Sometimes when building a skeleton, you may accidentally add bones to the wrong parent. Later, when you discover the error, deleting bones and adding new ones is just too much work. Instead, use the Change Parent tool to change a bone's parent. First, select the bone whose parent you want to change (using the Select Bone tool). Then, using this tool, click on the new parent bone. (The new parent will become highlighted in blue.) If you want to turn the selected bone into a root bone (one that has no parent), just click on the background.

Bone Strength

Bone Strength



Bone Strength Options

Tool Options

- ***Select Bone***: Click this menu button to select a bone by name.
- ***Bone Strength***: Allows you to view or enter a numerical value for bone strength.

Using the Tool

When using bones to control the points in a vector layer or to warp an image layer, by default every bone has some degree of influence over every point in the vector layer (or image). The Bone Strength tool lets you adjust how much influence each bone has. When this tool is activated, a semi-transparent region appears around each bone - this region indicates the strength of the bone. If you drag side to side on a bone with the Bone Strength tool, you cause the region of influence to shrink or grow. Points that are closer to the center of this region move more when the bone itself is moved.

Although by default, all bones have some influence over some points, you can change this behavior. In the Layer Settings dialog, under the Bones tab, there are two options, "Flexible binding" and "Region binding". Flexible binding means that every bone will influence every point. Region binding, on the other hand, means that a point will only move under the influence of the bone(s) in whose region of influence it lies. If that point only lies in one bone's region, it will only move with that bone - if the point is overlapped by the regions of two bones, it will move with both of those bones.

Flexible binding is the default setting for new bone layers because it works reasonably well almost automatically. The downside is that it

leads to "rubbery" movement of the attached vector artwork. Region binding will give you cleaner movement, but takes a little more work to set up. The Tutorials section of this manual shows you how to use the Bone Strength tool together with both types of binding to quickly set up a character's skeleton.

Manipulate Bones

Manipulate Bones

Using the Tool

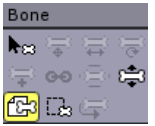
The Manipulate Bones tool has two purposes. First, when the current frame is set to 0, it is used to test whether a skeleton is set up and working properly. Although it moves bones and points around, the changes it makes are only temporary. When you switch to another tool, the skeleton is reverted back to its original shape.

The second use of this tool is at frames greater than 0. If the current frame is greater than 0, then this tool will move the skeleton in the same way, but the move will introduce a keyframe for animation.

To manipulate a skeleton, just click and drag the various bones that make it up. If points or other layers have been bound to the bones, they will move as well. The way the skeleton and the bound points move with this tool is exactly the same whether at frame 0 or a later frame. If some part of the skeleton doesn't move correctly, you can find out with this tool and fix it before you start animating.

Note: If you only want to rotate a single bone, it's better to use the Rotate Bone tool. The Manipulate Bones tool will move a whole chain of bones, which is definitely ***not*** what you want if you plan to rotate a single bone.

Bind Layer



Bind Layer

Using the Tool

Other layers can be contained within a bone layer. For example, you could create a "hand" layer and place that within an "arm" layer. To bind the hand to the arm, use this tool. Just click on the bone in the parent layer that you want to connect to, and the entire layer will move with that bone. In the arm/hand example, you would click on the bone nearest the wrist to bind the hand to the end of the arm.

Use this tool to bind an entire layer to a single bone. If you would rather

bind certain points in a vector layer to certain bones, then you should use the Bind Points tool instead.

Bind Points

Bind Point

Using the Tool

The Bind Points tool operates exactly like the Select Points tool described in "Draw Tools" on page 103. Use it to select a group of points to bind to a bone. In order to use this tool, a bone must first be selected. When a bone is selected, the points that are currently bound to it are automatically selected as well. Use this tool to add or remove points from that selected group. When the correct group of points is selected that you want to bind to the bone, press the spacebar - this tells Anime Studio to perform the binding.

This tool used to be very important for setting up connections between bones and points in Anime Studio. However, starting with Anime Studio 5.0, we don't usually recommend using the Bind Points tool. Instead, the best way to attach points to bones is to use automatic bone binding, together with the Bone Strength tool. This technique is demonstrated in the Tutorials section of this manual.

Offset Bone

Offset Bone

Offset Bone Options

Tool Options

- ***Select Bone***: Click this menu button to select a bone by name.
- ***Animation Offset X***: Allows you to numerically enter a value for the amount of offset on the X axis.
- ***Animation Offset Y***: Allows you to numerically enter a value for the amount of offset on the Y axis.
- ***Reset***: If pressed at Frame 0, resets a layer back to its default value. If pressed at any other frame, resets the layer to the value or values set at frame 0.

Using the Tool

The Offset Bone tool lets you add an extra amount of bone movement starting at frame 1 of your animation. The reason you might want to do this is to simplify the setup of a complex character. Often, parts of a character such as arms and legs overlap, making it difficult to set up bones and attach the proper parts of the character's body to them. The Offset Bone tool lets you draw the parts of a character in disconnected positions, set up bones, and then move them all back into position.

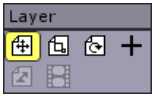
It's difficult to describe the usefulness of this tool without a hands-on example, so look in the Tutorials section of this manual for character setup examples.

Layer Tools

The following tools are available to be used with any type of layer. Their purpose is to modify an entire layer, not just an individual object in that layer.

If a tool has the following symbol next to it: , then it can be used for animation - using the tool at different frames in the timeline will cause the object you adjust to change over time.

Translate Layer



Translate Layer

Translate Layer Options

Tool Options

- ***Position X***: Allows you to numerically enter a value for the X coordinate.
- ***Position Y***: Allows you to numerically enter a value for the Y coordinate.
- ***Position Z***: Allows you to numerically enter a value for the Z coordinate.
- ***Reset***: If pressed at Frame 0, resets a layer back to its default value. If pressed at any other frame, resets the layer to the value or values set at frame 0.
- ***Show Path***: Check or uncheck this option to display or hide the motion path

- ***Flip Layer Horizontally***: Click this button to flip horizontally.
- ***Flip Layer Vertically***: Click this button to flip vertically.

Using the Tool

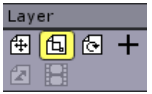
Use this tool to move the entire layer. It doesn't matter what objects are selected - ***everything*** in the layer will move when you use this tool. Holding the **Shift** key while using the Translate Layer tool will constrain the layer to only move vertically or horizontally. Holding the **Alt** key will move the layer forward and back (changing its depth, or Z value).

If the "Show Path" box in the tool options area is checked, then the motion path for the current layer will be displayed in the working area when this tool is active. This makes it easier to visualize and plan out the motion of a layer.

Direct Path Editing: To edit the motion path directly, hold down the **Ctrl** key, then click and drag anywhere on the motion path to adjust the curve that the layer will follow through space.

Nudging: When this tool is active, you can "nudge" a layer by small increments by holding down the **Ctrl** key and pressing the arrow keys. Hold down **Shift** in addition to **Ctrl** to nudge the layer by a greater increment.

Scale Layer



Scale Layer

Scale Layer Options

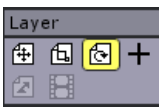
Tool Options

- ***Scale X***: Allows you to enter a numeric value for scaling along the X axis.
- ***Scale Y***: Allows you to enter a numeric value for scaling along the Y axis.
- ***Scale Z***: Allows you to enter a numeric value for scaling along the Z axis.
- ***Reset***: If pressed at Frame 0, resets a layer back to its default value. If pressed at any other frame, resets the layer to the value or values set at frame 0.
- ***Flip Layer Horizontally***: Click this button to flip horizontally.
- ***Flip Layer Vertically***: Click this button to flip vertically.

Using the Tool

Use this tool to resize the entire layer. When this tool is active, a red box will appear on top of the current layer. The handles around the edges of this box allow you to resize the layer. Drag a corner handle in and out to scale the layer while maintaining its proportions. Drag one of the side handles to change the horizontal scale, or the top or bottom handle to change the vertical scale. If you hold the **Alt** key while dragging a side handle, Anime Studio will resize the layer in such a way to maintain the overall volume of the objects in the layer - this can be useful for squash and stretch effects.

Rotate Layer Z



Rotate Layer Z

Rotate Layer Z Options

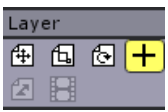
Tool Options

- ***Z Rotation***: Allows you to enter a numerical value for rotation along the Z axis.
- ***Reset***: If pressed at Frame 0, resets a layer back to its default value. If pressed at any other frame, resets the layer to the value or values set at frame 0.
- ***Flip Layer Horizontally***: Click this button to flip horizontally.
- ***Flip Layer Vertically***: Click this button to flip vertically.

Using the Tool

Use this tool to rotate the entire layer. Holding the **Shift** key while using the Rotate Layer Z tool will constrain the rotation to 45 degree increments.

Set Origin



Set Origin

Set Origin Options

Tool Options

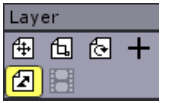
- ***Origin X***: Allows you to view or enter a numerical value for the X origin
- ***Origin Y***: Allows you to view or enter a numerical value for the Y origin
- ***Reset***: If pressed at Frame 0, resets a layer back to its default value. If pressed at any other frame, resets the layer to the value or values set at frame 0.
- ***Flip Layer Horizontally***: Click this button to flip horizontally.
- ***Flip Layer Vertically***: Click this button to flip vertically.

Using the Tool

Click anywhere in the layer to set the origin to that point. The origin of a layer is indicated by the crosshair displayed when editing that layer. The origin is the point that the layer rotates around when using the Rotate Layer tool, and the point that the layer resizes around when using the Scale Layer tool. The location of the origin can also define how a layer will move when it is attached to a group of bones.

Although you can change the origin at any time, the position of a layer's origin is not animated. We recommend setting the layer's origin just once, and then leaving it alone for the rest of the animation - otherwise unpredictable movement can occur. In most cases, you will never need to change the origin of a layer at all.

Switch Layer



Switch Layer

Switch Layer Options

Tool Options

- ***Active Child***: Use this menu to select the active layer for the switch function

Using the Tool

This is a specialized tool for use with Switch layers only. This tool has no effect if you click and drag in the workspace. What it does is supply a popup menu in the tool options area that lists all the sub-layers of a switch group. You can change the active layer by selecting it from the

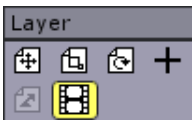
menu.

Video Tracking

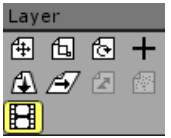
To use the video tracking feature, you need to have a movie file in your project. Either import a movie into an existing project or open a movie file from scratch. The following sections describe the process of how the video tracking feature works

Adding Tracking Points

Assume that you have imported a video, and you want to eventually add an object that will follow the position and rotation of a person's thumb and wrist. The first step of the process is to add tracking points that identify the two points you want to follow. The Primary tracking point controls the position of the object's origin. The Secondary tracking point controls the angle or scale of the object. To add the tracking points, select the Video Tracking tool from the Layer panel.

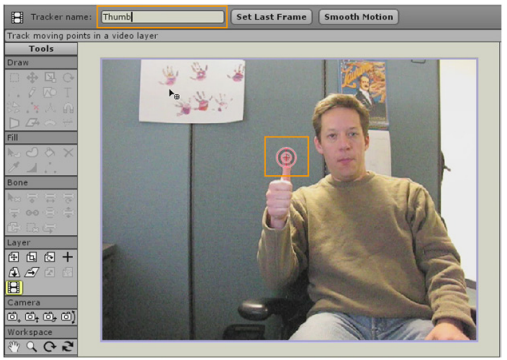


Video Tracking tool



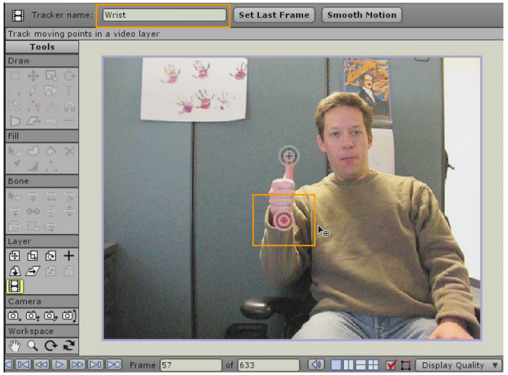
Video Tracking tool

Click on the first point you want to track. You can click, and then drag to position the point exactly where you want to place it. It is optional, but recommended, that you name the tracked point in the Tracker Name field of the status bar. For example, since we are tracking a thumb here, we name the tracking point "Thumb."



The first tracking point is added to the thumb

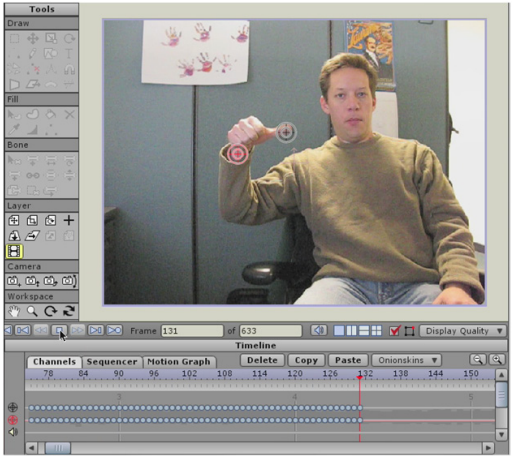
Now we add the second tracking point for the wrist, and name it (appropriately) "Wrist."



The second tracking point is added to the wrist

After you place your tracking points, make sure the Video Tracking Tool is still selected. Play the video back and watch the tracking points follow the points you selected. Playback runs a little slower during video tracking.

As you play the video back, you'll notice keyframes being added to the timeline. While the video is playing, watch for any problem spots in the way that the tracking points follow the items you want to track. When you see a problem, don't worry ... there are ways to fix them!



After the tracking points are added, keyframes are generated in the timeline

Fine-tuning Marker Positions

You might notice some places where the tracking points seem to drift away from the marker, or stop following it entirely. If this happens, stop the video playback. Go back to the beginning of the movie. Zoom in more closely to the video and use the Video Tracking tool to reposition the markers that need to be adjusted.

Choose **View > Reset** to reset the zoom level of the video back to the default. Play the video again and watch for any other problems. Keep

making adjustments until you are happy with the results. The following movie shows our markers after they have been adjusted.

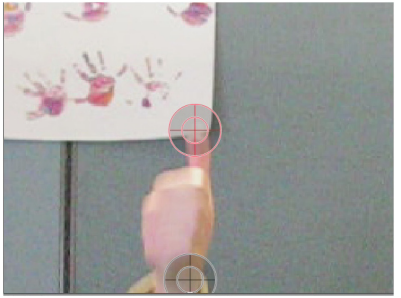
Markers after they are adjusted.

Re-syncing Tracking Points

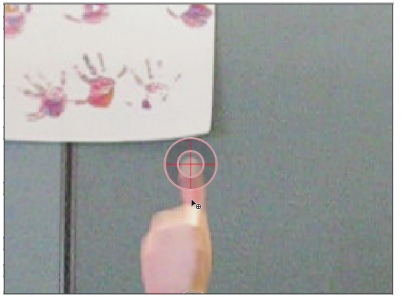
You may also find instances where the tracking points go out of sync with the tracked object. The most likely cause for this is when the tracked area touches or passes over another area in the video that is very close in color. For example, when the tip of the thumb goes in front of the paper on the wall, there are similar colors in the paper that cause the tracking point to go out of sync with the thumb. Fortunately, there is a way to fix that. The next movie shows one of those problem areas.

The tracking point loses focus after reaching the paper on the wall.

To fix this type of problem, you scrub through the timeline until you find the point where it loses track. In the next figure you see the spot where the thumb appears to blend in with the paper. This is the area that causes the tracking point to lose sync with the thumb.



Find the point where the point loses focus.



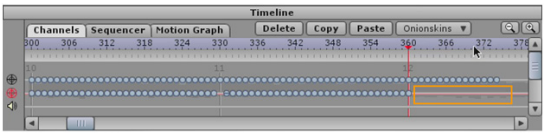
Advance the video to a clear spot and adjust the tracking point.

After you find the problem frame, advance ahead a couple of frames until you reach a point where there is more contrast. Then drag the tracking point to position it where it should be. When you press Play, the tracking point will continue tracking from there.

Sometimes color similarities occur for a period that is longer than a couple of frames. For example, in our video there is a segment where the thumb passes across the face. This is a much larger area where there is very little color contrast between the tracked object and the area it passes over.

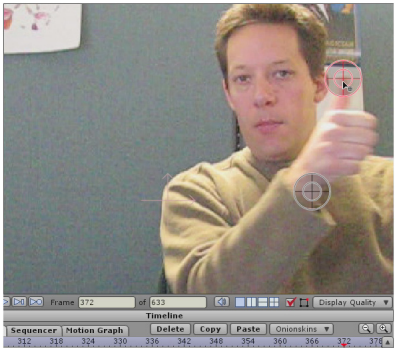
The solution here is slightly different. You can use interpolation to calculate the path between two good points. First, move back to find the last good point before the thumb crosses the face. Delete the keyframes from that point until the thumb passes across the face and reaches the other side.

Here we move to the point just before the thumb passes over the face ...



... and we delete the keyframes that occur until the thumb reaches the other side of the face.

Jump ahead in the video to a point after the thumb passes over the face and reposition the tracking point. When you play the video back, Anime Studio will interpolate the motion between the keyframes that are missing.



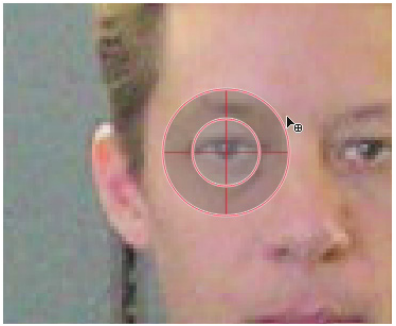
On the other side of the face, we reposition the tracking point to a good spot.

Adjusting Tracking Point Sensitivity

When you add tracking points, you can change the sizes of the inner and outer rings to adjust the falloff. Click and drag on the edge of the rings to change the size. The inner ring defines the region that you are trying to track. For example, if you are trying to track an eye, adjust the inner ring so that it surrounds the eye.

The outer ring represents how fast the object can move. From one frame to the next, the outer ring represents the maximum distance that you want the object to move. If you have a fast-moving object you may need to increase the size of the outer circle for tracking. Expanding the search area too much can lead to further errors, so you want to keep it as narrow as possible. The default settings are generally sufficient for

most cases.

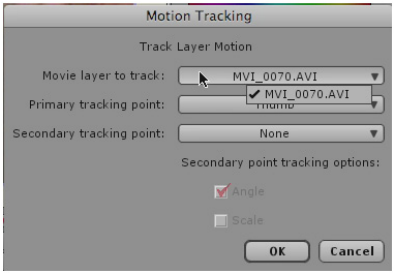


Two rings control the sensitivity of the tracking point.

Assigning the Tracked Layer

After you set the two points on the object you want to track, you can then assign the layer that will track those points. In our example, we returned to Frame 0 and added an exclamation point to a new layer. Now we want the exclamation point to follow the hand in the video.

To assign the layer that will track the points, choose **Animation > Track Layer to Video**. The Motion Tracking dialog lists the videos in your scene (in this case, there is only one).

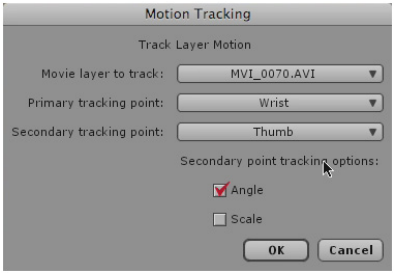


Select the movie to track, then choose the primary and secondary tracking points.

First we'll assign the Primary Tracking Point, which is associated with the origin point of the tracked layer. We want the origin of the exclamation point to track the Wrist point. So, we select "Wrist" here and choose OK. When we play the result, the origin of the exclamation point (represented by the crosshairs) tracks the wrist.

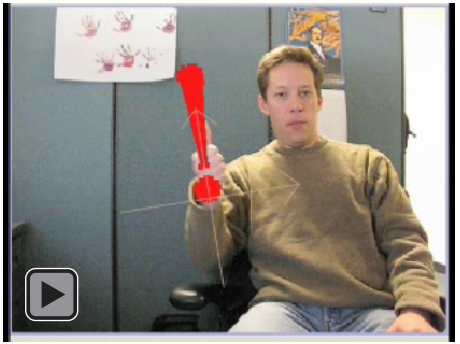
The crosshairs of the exclamation point, representing the origin, now follow the primary tracking point.

The secondary tracking point is optional. You can use it to control either the angle or scale of the tracked layer. In our case, we want the thumb to control the direction of the exclamation point, so we select the thumb as the secondary tracking point. Then we check the option to control Angle.



The secondary tracking point can control the angle or scale of the tracked layer. We want the thumb to control the angle of the exclamation point.

The following movie shows the results of our selections. Now when you play the movie, the origin of the exclamation point follows the wrist, and the angle of the exclamation point is follows the angle line from the wrist (primary tracking point) to the thumb (secondary tracking point).



The exclamation point now follows the wrist, and points in the same direction as the thumb.

Offsetting the Origin

You can use the Translate tool in the Draw panel to move the tracked object away from the origin. The origin still tracks to the two tracking points, but the object that you are tracking can be offset.

You can offset the object from its origin with the Translate tool.

Once you have applied video tracking points to another layer, the two layers are totally independent. The tracking feature creates standard keyframes. You can edit, add or remove keyframes to the tracked object. You can also hide or delete the video layer that was used to initially create the tracking points and keyframes. The layer that was tracked to the video will still continue to follow the motion. This allows you to use a video file as a reference whether or not you want to see the video in your final project.

Camera Tools

Moving around a scene

The following tools let you move a virtual camera around in a scene. Although layers in Anime Studio are primarily 2D, Anime Studio's camera

can be moved around in true 3D space. The camera tools affect all layers in the document, not just the currently active layer.

If a tool has the following symbol next to it: , then it can be used for animation - using the tool at different frames in the timeline will cause the object you adjust to change over time.

Track Camera

Track Camera Tool

Using the Tool

This tool moves the camera up and down, and side-to-side. By giving the project's layers different depth values, you can create parallax (depth) effects (see the tutorials section for an example). Holding the **Shift** key while using the Track Camera tool will constrain the camera to only move vertically or horizontally. Holding the **Alt** key will move the camera forward and back.

If the "Show Path" box in the tool options area is checked, then the motion path for the camera will be displayed in the working area when this tool is active. This makes it easier to visualize and plan out the motion of the camera. (The camera's motion path is only visible when the Orbit Workspace tool has been used to view the scene from outside the camera.)

Tool Groups

Zoom Camera

Zoom Camera Tool

Using the Tool

This tool zooms the camera in and out on the scene, just like the zoom control on a real camera. Technically, the Zoom Camera tool is changing the field of view angle (or focal length) of the virtual camera.

Roll Camera

Roll Camera Tool

Using the Tool

This tool rolls the camera side to side. Try tilting your head side to side, and you'll understand this tool immediately.

Workspace Tools

Change your view of the workspace

The last group of tools in the toolbar is always available, regardless of the current layer type or the current selected object. These are the Workspace tools, and are used to control your view of the project, but don't actually modify the project itself.

Pan Workspace

Pan Workspace Tool

Using the Tool

When the Pan Workspace tool is selected, you can click and drag in the working area to move the project side to side and up and down. Note that this isn't the same as moving the objects in your project - only your view of them is changing, not where they appear in the final image. A shortcut for the Pan Workspace tool is to click and drag in the working area using the right mouse button - it's a quick way to pan, regardless of what tool is selected in the toolbar.

Zoom Workspace

Zoom Workspace Tool

Using the Tool

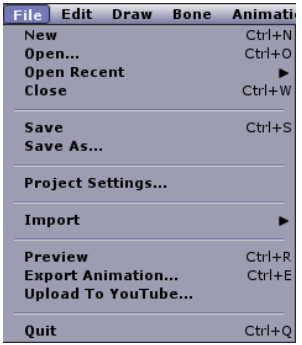
The Zoom Workspace tool is similar to the Pan Workspace tool: it moves your view of the project, without modifying the objects themselves. With this tool, dragging the mouse zooms your view of the project in and out. A shortcut for the zoom tool is to click and drag in the working area using the right mouse button while holding down the shift key - it's a quick way to zoom, regardless of what tool is selected in the toolbar.

User Interface

Anime Studio Menus

Anime Studio's menu bar contains commands for managing projects (Open, Save, etc.), as well as commands that apply to certain layer types (the Draw and Bone menus). This section will describe all the menu commands available in Anime Studio.

File Menu



File Menu

New

Creates a new, empty Anime Studio project.

Open...

Prompts you to open a Anime Studio project file that was previously saved to disk.

Open Recent

Displays a list of recent files that you can reopen.

Close

Closes the current project.

Save

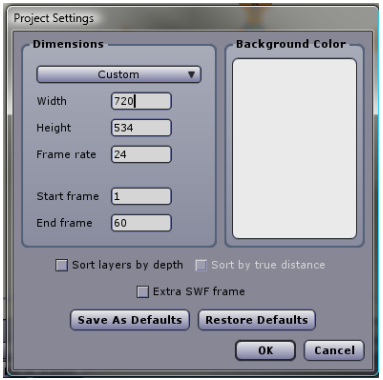
Saves the current project to disk.

Save As...

Prompts you for a name and location, then saves the project to disk.

Project Settings...

Brings up the project settings dialog. As seen below, the project settings dialog lets you control the pixel width and height of the project, as well as the number of frames per second. You're free to change these values at any time, although it's easiest if you set up the values you want before you start creating your animation (particularly the frame rate). Also in this dialog, you can set the start and end frames of your animation, defining how long the overall animation will be.



The Project Settings dialog.

- ***Dimensions***: Allows you to set Custom dimensions, or choose from a wide variety of presets. Presets include the following:
  - ***Custom***: Allows you to enter or edit your own settings.
  - ***NTSC D1***: 720 x 534 pixels, 24 frames per second
  - ***PAL D1/DV***: 788 x 576 pixels, 24 frames per second
  - ***VGA***: 640 x 480 pixels, 24 frames per second
  - ***Web***: 320 x 240 pixels, 24 frames per second
  - ***Web Widescreen***: 426 x 240 pixels, 24 frames per second
  - ***YouTube***: 480 x 320 pixels, 24 frames per second
- When you select a preset, the following settings appear below.
  - ***Width***: The width, in pixels
  - ***Height:*** The height, in pixels
  - ***Frame Rate***: The number of frames per second in the animation.
  - ***Start Frame***: The starting frame of the animation.
  - ***End Frame***: The ending frame of the animation.
- ***Background Color***: Sets a background color for the project - just click on the color swatch.
- ***Sort Layers by Depth***: The "Sort layers by depth" checkbox allows top-level layers in Anime Studio to move in front of and behind each other during an animation. Normally, layers are drawn in the order they appear in the Layers panel. However, with this option turned on, layers are displayed according to how far they are from the camera. See the Tutorials section for an example of using this feature.
- ***Sort by True Distance***: Typically, layers are sorted by their

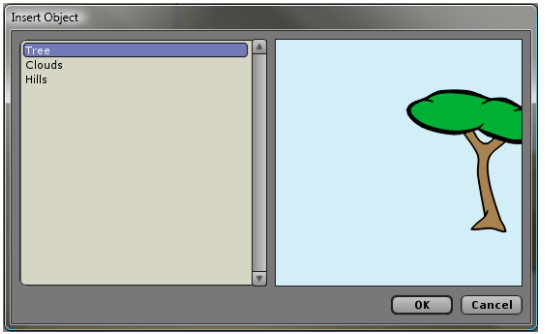
depth from the camera, but if you're trying to create a 3D object using multiple Anime Studio layers (like a cube or pyramid), you may want to turn on "Sort by true distance". This tells Anime Studio to sort layers by the distance from the camera to the layers' origins, rather than by depth. Usually this option will be left unchecked.

- ***Extra SWF Frame***: Check this option to add an extra frame at the end of the video
- ***Save as Defaults***: When you create a new project in Anime Studio, your animation defaults to 320x240 pixels at 24 frames per second. If you create most of your projects at different settings, you can change these defaults. Just type in new values in this dialog, and click "Save As Defaults" to make the new settings the default settings for all new projects.
- ***Restore Defaults***: Resets the project to the default values.

Import

Anime Studio can import several kinds of other media files into an animation project. The commands in this sub-menu let you import these files.

- ***Anime Studio Object:*** This command will ask you to choose a Anime Studio project file. Once you've chosen a file, a list of layers in the project will show up in the dialog



The Insert Object dialog

Select one of the layers to add it to your own project (a preview of the selected layer appears on the right side of the dialog). The entire layer will be copied into your open project, including any animation in the layer. This is an easy way to share objects between project files and reuse bits of animation here and there.

Several files are included with Anime Studio that contain scenery, characters, props, etc. You are welcome to include these in your own projects by using this menu command.

- ***Image*** Imports an image file as a new Image layer. The most common type of file to import into Anime Studio is images. It

doesn't matter how the images are create, so feel free to use pictures from digital cameras, backgrounds from scanned drawings or painted on the computer, textures, computer-generated 3D scenery, etc. The image formats supported by Anime Studio are: JPEG, BMP, Targa, GIF, and PNG. Generally, we recommend PNG, since the PNG format provides for variable levels of transparency, allowing you to create non-rectangular images that can blend in smoothly with other elements in the scene.

- ***Movie***: Imports a movie file as a new Image layer. Anime Studio supports importing QuickTime (Windows and Mac OS) and AVI (Windows only) movie files. A movie that you import into Anime Studio will play back along with the Anime Studio animation, allowing you to combine 2D and 3D elements, or to composite an Anime Studio animation on top of a pre-recorded video sequence. On Windows, if you have problems importing QuickTime movies, then you probably need to download and install QuickTime. Anime Studio will also import native Moho files (files ending with .moho).
- ***Audio File***: Loads a sound file to be used as a soundtrack for the current animation. The audio formats supported by Anime Studio are listed in "Product Comparison" on page 208. This command is the same thing as "Select Soundtrack" in the Animation menu. Anime Studio has limited support for audio, but you can import a single sound file as a soundtrack for your animation. Anime Studio uses libsndfile to handle sound files, so any format that libsndfile supports is fair game. Generally, it's best to stick with uncompressed WAV or AIFF files.

Import Notes and Tips

Referenced Files

Please note that Anime Studio references the directory location of images, OBJ's, sound files and movies files that have been imported for use. When exporting into movie format, Anime Studio continues to reference this directory location. Moving referenced items from one location to another will prevent the item from being displayed or heard. We recommend that all items used in your animations or artwork accompany it's native file format (ANME) and final exported format.

Startup Folder

Adding your own .anme file to the "Startup Folder" (located in the root directory of your Anime Studio installation) will always make Anime Studio open this .anme document first when it's initially launched. Please make sure to rename your .anme file to "StartupFile.anme".

Moho Files

Anime Studio will also import native Moho files (files ending with .moho).

Library Content

Please read Section 6 of the EULA (End User License Agreement) for rules on using the content that has been supplied with your version

of Anime Studio. Please note that when importing existing content/ movies from the Anime Studio Content Library using the **File > Import** option, some animations/movies exceed the default "End Frame". This will prevent you from seeing the full movie. To adjust the default "End Frame" settings, please select **File > Project Settings** and change the field beside "End Frame". The default is typically 72 frames. You can also double click the movie/content file you would like to view from within the Content Library. To access the Library, select **Help > Open Content Library**.

Photoshop Tips

Advice for working with Anime Studio and Photoshop

Anime Studio is equipped with a Photoshop export script that will give you the ability to take your PSD files and export them into .ANME format. The .ANME format is the native Anime Studio format. This process helps users from having to re-draw or export individual layers as images into Anime Studio.

What does the Script Do?

Basically, the script converts PSD formatted files to .ANME files. It exports every layer that was created originally in Adobe Photoshop and makes it completely readable when imported into Anime Studio. All versions of Adobe Photoshop since version 7 should support this script.

How does the Script Work?

The script exports the following 2 things: Firstly, it converts the PSD file into a .ANME file. Secondly, all the individual layers of the PSD file are converted into individual PNG files and are placed in a folder of the same name as the .ANME file. The folder with the PNG's and the newly converted .ANME file will be located side by side. It is important to note that whenever you open the .ANME file, it will reference the PNG folder. So please keep them side by side. If the PNG folder and the newly converted .ANME are not located in the same folder, the layers within your newly opened .ANME will not work properly in Anime Studio.

Where is the Script located and how do you use it? The PSD to ANME script is named "Export Layers To Anime Studio.jsx". To access this script, please make sure you've installed Anime Studio. The script is available in the installation directory of Anime Studio, in a folder labeled "Extra Files".

To use the script within Adobe Photoshop, please make sure you have it installed on your computer. Copy the "Export Layers To Anime Studio. jsx" to your .../Photoshop/Presets/Scripts folder. You should then be able to open up a Photoshop document, run this script from **File > Scripts > Export Layers to Anime Studio**, and it will generate a new Anime Studio file complete with an image layer for each original Photoshop layer.

Preview

Generates a preview image of what your project will look like. If you're in the process of animating your project, the image will be of the current

frame in your animation. A preview image does not contain all the fill styles, and is of lower quality, but is quicker to generate than a fully rendered image.

When the Preview window opens up to display your work, you can save the preview as a still image, using the popup menu in the Preview window.

Exporting Movies

Most often, you'll export an animation as a movie file. You have two choices:

QuickTime (Windows and Mac OS): QuickTime is a very flexible format for working with movies. We generally recommend using QuickTime with the Sorenson 3 codec for the best combination of low file size and quality. If you choose QuickTime, Anime Studio will also export the soundtrack (if you have applied one to the animation). On Windows, if you don't see QuickTime as an option, then you need to download and install QuickTime.

AVI (Windows only): On Windows you can also export movies in AVI format.

When exporting a movie, Anime Studio will include an alpha channel if the codec you're using supports it. This makes it possible to composite Anime Studio movies with other media in a video editing program.

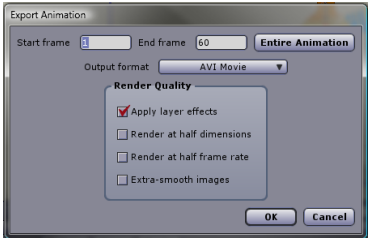
If you're using QuickTime, set the color depth to "Millions of Colors+". The "+" is QuickTime's indication of an alpha channel. The codecs that support this include Animation, None, PNG, TGA, and TIFF.

AVI on Windows doesn't include any built-in codecs that support alpha channels. However, at least one such codec does exist, and you can download it for free - the Huffyuv codec.

Anime Studio can only export to a maximum size of 768 pixels x 768 pixels and 3000 frames. (Anime Studio Pro does not have this limitation.)

Export Animation...

This command brings up a dialog that lets you export an animated sequence and save it to disk. The Anime Studio project file is where your work is saved, but to view the animation as a movie, to put it on the web, or to work with it in other programs, you have to export the animation.



The Export Animation dialog.

The dialog asks for a starting and ending frame (these default to the entire animation), and an output format. You can output a sequence of

frames, a movie file, or a Flash SWF file. Anime Studio will then ask you where to save the result. Once the animation begins exporting, you are free to keep working while the animation is being drawn. A progress bar at the top of the animation window will inform you of the export progress.

The Export Animation dialog also has several options for adjusting the output quality of your animation. These default to the highest quality rendering, but you may sometimes want to lower the quality to increase rendering speed or to output animations with smaller file sizes for streaming over the internet. The rendering quality options available are:

- ***Start Frame***: Enter the start frame for your exported movie here.
- ***End Frame***: Enter the end frame for your exported movie here.
- ***Entire Animation***: Press this button to reset the start and end frames to include all frames in the movie
- ***Output Format***: Choose from AVI Movie, QuickTime Movie, or Flash (SWF).
- ***Apply layer effects***: If this box is un-checked, Anime Studio will skip layer effects like layer shadows and layer transparency.
- ***Render at half dimensions***: Check this box to render a smaller version of your movie. This makes rendering faster if you just want a quick preview, and is useful for making smaller movies for the web.
- ***Render at half frame rate***: Check this box to skip every other frame in the animation. This makes rendering faster, and results in smaller movie files.
- ***Extra-smooth images***: Renders image layers with a higher quality level. Exporting takes longer with this option on.

Exporting Flash

Anime Studio can also export Flash files in SWF format. Flash is a common vector animation format on the Web. When exporting Flash, Anime Studio will also include the soundtrack (if any), if the soundtrack is in MP3 format. If you plan on exporting Flash files, it is important to read "How to Create Efficient Flash Files" on page 158.

Flash Tips

Advice for working with Anime Studio and Flash

Among the other export formats that Anime Studio offers, you also have the option to output Flash SWF files. SWF is a format created by Adobe as a way to deliver animated vector artwork and interactive applications. Flash animations are very common on the web, and most users already have the Flash player installed on their computers. Because Anime Studio is also vector-based, there are enough similarities to make it possible for Anime Studio to export SWF files.

However, Anime Studio and Flash are not completely compatible. Therefore, not all the features of Anime Studio can be exported successfully to Flash. In addition, because Flash is a web format, small file size is important - there are certain issues to keep in mind when working with Anime Studio if Flash is your intended output format.

When exporting SWF files, you may want to use Macromedia's Flash authoring tool to combine multiple SWF files, add extra elements, sound,

etc. Be aware that Anime Studio's SWF files are compatible with Flash MX and later - Flash 5 and earlier are not able to load Anime Studio-created SWF files.

What Can be Exported

Most common objects in Anime Studio can be exported to Flash. These include:

- Vector layers
- Fills/Outlines/Colors
- Transparency
- Gradients
- Variable-width lines (try to use these sparingly - see below)
- Bone warping of vector layers
- Image layers (PNG and JPEG only, and only if they are not warped by a bone layer)
- Particle layers (careful - a complex particle effect can easily overwhelm Flash)
- A soundtrack can be exported if it's in MP3 format, and at either 44100kHz, 22050kHz, or 11025kHz sample rate. If you want your SWF file to contain audio, make sure that your project contains ***only one audio track***, and that the audio track is in MP3 format. In order for Anime Studio to play MP3 format audio files, you must have QuickTime installed

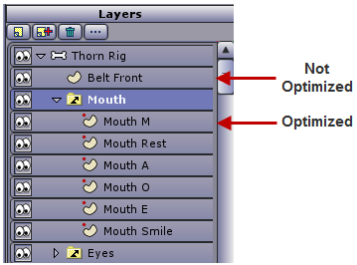
What Can't be Exported

On the other hand, some things in Anime Studio are just not compatible with Flash, and cannot be exported to a SWF file. The following list covers the most important of these objects and effects.

- Brushes
- Fill and line effects (except gradients)
- Layer effects (shadows, shading, layer blur, motion blur, etc.)
- Image warping or 3D movements in image layers
- Image layers that use progressive JPEG images (Flash can't handle progressive JPEG images)
- Layer masking
- 3D layers
- Multiple audio tracks, or audio tracks other than MP3 format

How to Create Efficient Flash Files

When you're creating an animation with the intent to produce an SWF file as output, there are several things to keep in mind. An important concern with SWF files is keeping the file size down. The key way to do this in Anime Studio is to keep as many layers "optimized" as possible. An optimized layer when exported to SWF will take up much less space than a non-optimized one. (For other formats, like QuickTime or AVI, it doesn't matter.) You can tell which layers are optimized by looking for a little red dot next to the layer's icon in the Layers window:



Notice the red dot by the optimized layer.

A new layer is optimized to start with, but depending on the effects you apply, that optimization can go away. The following things will "de-optimize" a layer. Note: a non-optimized layer will still export to Flash, it just won't be nearly as efficient.

- 3D camera movements (this will de-optimize all layers in the project, so it should be avoided if possible when targeting SWF)
- 3D layer rotation (X or Y rotation, or perspective rotation)
- Layer shear
- A group layer that has 3D rotation or shear will cause all of its sub-layers to be non-optimized
- Uneven scaling in the X and Y directions
- Point animation
- Bone animation is a common cause of non-optimized layers. What's happening is that because Flash doesn't have a bone system like Anime Studio, Anime Studio needs to export a lot of extra information for Flash to be able to produce the same effect. One way to use bone animation and to stay optimized is to attach a vector layer to a single bone, instead of letting the bones warp all the points in the vector layer. The vector layer will then remain optimized. While you can't do this in all cases, sometimes you can break up a character into multiple body parts - some parts will be warped with the bones, and some will be attached to a single bone. At least some parts of the character can remain optimized.

Here are some other things to think about when exporting to SWF:

- Consider using a lower frame rate (12 fps, for example) for your animation. Fewer frames means a smaller file.
- If some of your layers can do without any animation at all, or just layer translation/scaling/rotation (background scenery, props, background characters, etc.), that can save a lot of space.
- If most of a layer is stationary, except for one small object, move that object into its own layer if possible. Example: a character who is waving his arms, but is otherwise still - move the arms into a separate layer from the rest of the body. The body will remain optimized and take up much less space.
- If an object sits still for a time with no animation, consider replacing it with a non-animated object for that time period.

What to Avoid

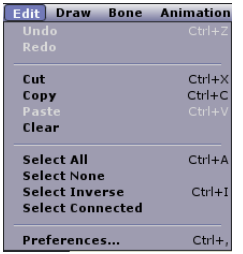
If your goal is to create a SWF animation, there are some things you should try to avoid. Besides the effects that just are not possible to export, you should try to avoid the following effects if possible. These are all things that can be exported - it's just that they make for a less efficient SWF file. Of course, you won't want to avoid all of these things all of the time. However, if you plan your animation carefully, and use as few of the following effects as possible, the resulting SWF file will be smaller, and will load quicker over the web.

- 3D camera moves - no Flash optimization is possible when you're moving the camera around in 3D. Simple side-to-side pans and zooms are OK, but when you start using camera pan/tilt, Flash efficiency goes down the drain.
- Try to use as few control points as possible in your vector artwork.
- The freehand tool and the insert text dialog can generate a lot of points, resulting in a big SWF file.
- Limit the use of variable-width lines. It's easy to overwhelm Flash with the complexity of variable-width lines, making the resulting SWF file play back unpredictably. Read "How Big Can a Flash Movie Be?" for more information. If possible, only use variable-width lines in SWF-optimized layers.
- Avoid compound shapes (two adjacent circles filled as one, shapes with holes, or figure 8's).

Quit

Quits Anime Studio. Prompts you to save any unsaved projects.

Edit Menu



Edit Menu

Undo

Choose this command to undo the last operation. You may undo up to 8 of your most recent editing operations in Anime Studio.

Redo

This command will redo the last operation that you "un-did" with the Undo command.

Cut, Copy, Paste

These are the traditional clipboard commands. They can be used together with the Draw editing tools for vector layers, and operate on the currently selected group of points.

Clear

This command is the same as pressing the backspace or delete key: the currently selected object in the working area will be deleted from the project.

Select All

Selects all the points in the active vector layer.

Select None

De-selects all the points in the active vector layer.

Select Inverse

Selects the opposite points in the active vector layer. Selected points will become de-selected, and de-selected points will become selected.

Select Connected

Selects all points that are connected to any other currently selected points. For example, if you have a complex shape like a character's head, just select a few points on it, then choose this command: if all the points on the head are somehow connected together, the whole head will now be selected.

Preferences...

Brings up a dialog that lets you customize some aspects of Anime Studio, such as the display colors used in the working area of the Anime Studio window. Some of these features including Edit Colors and GUI Colors are only available in Anime Studio Pro.

Options

- ***Auto-assist with bone locking keyframes***: Adds an extra keyframe when bones are locked or unlocked to prevent them from "drifting".
- ***Scale compensation for new layers***: When a layer is scaled up (or down), its lines get thicker (or thinner) to match. If you don't want this behavior, turn off this option. You can also

control this on a per-layer basis in the Layer Settings dialog. This option controls it for any new layers you create.

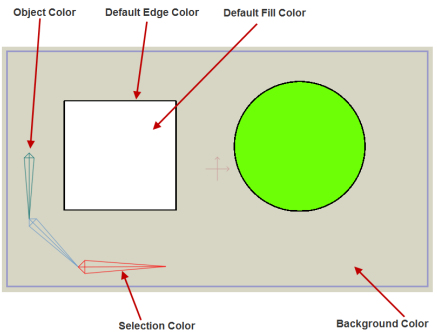
- ***Show paths for new layers***: Determines whether the paths (previously called construction curves) are displayed for new layers. They're always shown for the selected layer, but usually hidden otherwise.
- ***Auto-name bones and shapes***: Bones and shapes can be named by the user. If this is turned on, all bones and shapes get names like "1", "2", etc.
- ***Zoom with drag box***: When this option is on, allows you to draw a box around the area that you want to zoom into, rather than using a continuous zoom.
- ***Consolidate timeline channels***: Instead of showing separate channels (point animation, bone animation, layer translation, layer rotation, etc.), this option groups all channels into one in the timeline palette. This is on by default in Debut, and off in Pro.
- ***Status bar at top of window***: Shows the status bar at the top of the window, rather than the bottom. The status bar is where tools show their descriptions, like what modifiers keys do what, etc.
- ***Highlight frame 0***: If on, a red box is drawn on the canvas if the current time is set to 0. This can be helpful to remind you when you're working on frame 0 (the setup frame) vs. some other frame.
- ***Enable drawing tools only on frame 0***: Creation tools (Add Point, Freehand, Draw Shape, Add Bone) are only available on frame 0 if this option is on. Otherwise, they can be used at any time.
- ***Use SMPTE timecode***: Shows time in the timeline using SMPTE timecode instead of frame numbers. SMPTE timecode looks like this: ***00:02:34:07*** That would be 0 hours, 2 minutes, 34 seconds, and 7 frames.
- ***Show angles in degrees in timeline***: Angle values (like layer rotation or bone rotation) are shown in radians in the timeline's Motion Graph. This is because angle values in radians are smaller numerically and fit in better with other values in the graph. But if the user chooses to, they can display these curves using degrees with this option.
- ***Disable custom tool cursors***: A long time ago there was a bug on some Windows systems where tool cursors didn't display correctly. Turning on this option will just use the standard system arrow cursor, regardless of what tool is active on the canvas. It may not be needed anymore (I'm not sure if that bug happens for anyone these days).
- ***Disable audio feedback***: When welding points, you hear a "clicking" sound in Anime Studio. Turning this option on will disable the click.

Video Uploads:

This tab is used to enter your YouTube user account name and password. Anime Studio will log into this account to post YouTube videos when you select the **File > Upload to YouTube** command.

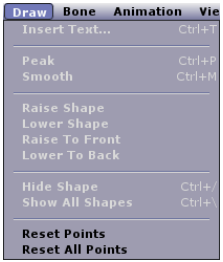
Editor Colors:

Allows you to change the color scheme for the editor window, including various options for background and object colors. Press the Reset button to return to default application colors.



Editor Colors

Draw Menu



Draw Menu

Insert Text...

A dialog will pop up with controls to type in some text and choose a font. When you click OK, the text will appear as a set of curves in Anime Studio. These curves are just like any drawing in Anime Studio - you can manipulate them with any of the Anime Studio tools, like any other object. There is also a checkbox that lets you decide whether to create the text as a single fill, or as separate fills for each character (in case you want to color/style them differently). The text will be filled using the current fill color/style.

There is no font size control when you create the text: the Anime Studio scale tool should be used to control the size of the text after you create it.

Peak

This command creates a peaked (or hard) transition between the curves at the point that you click.

Smooth

This command smooths the transitions between the curves at the point that you click.

Raise Shape

Select this menu item to raise a shape in the stacking order. This will move it in front of the next higher shape. The stacking order only applies to shapes within the same layer - all shapes in a layer will appear above any lower layers and behind any upper ones, regardless of stacking order. Note that if there is no shape overlapping the selected one, you may not see any change when this item is selected, even though the shape gets moved higher.

Lower Shape

Select this menu item to lower a shape in the stacking order.

Raise to Front

Works like Raise Shape, but raises the shape above all others in its layer.

Lower to Back

Works like Lower Shape, but lowers the shape below all others in its layer.

Reset Points

Moves the selected points back to their original positions, adding a new keyframe for them at the current time.

Reset All Points

Same as above, but moves all points in the layer back to their original positions, not just the selected ones.

Bone Menu

Bone Menu

Release Points

This command detaches the selected points from any bones they may be bound to.

Flexi-Bind Points

This command binds the selected points to bones in such a way that they will influenced by all the bones in the parent bone layer, depending on the strength and region of influence of each bone. This results in more of a "squishy" type of motion when the skeleton is animated. This is the default behavior for all drawings in Anime Studio, so you usually won't have to use this menu command - the points are probably already flexi-bound.

Release Layer

This command detaches the current layer from any bone it may be bound to.

Flexi-Bind Layer

This command binds the current layer to the bones in the parent layer in such a way that the child layer will influenced by all the bones in the parent bone layer, depending on the strength and region of influence of each bone. This results in more of a "squishy" type of motion when the skeleton is animated.

Hide Controlled Bones

Hides any bones that are set up to have their angle or position controlled by another bone. These types of bones are often not animated by the user (their animation is "automatic" through the control feature), and hiding them can clear up some of the clutter in the workspace. This function is not available when the time is set to frame 0.

Track Bone to Video

Allows you to link a bone to the tracking points that you defined with the Video Tracking tool. For a description of how to use this tool, see "Video Tracking" on page 140.

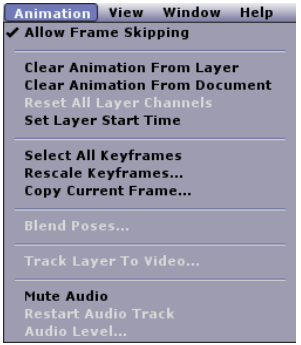
Reset Bone

Moves the selected bone back to its original position, adding a new keyframe for it at the current time.

Reset All Bones

Same as above, but moves all bones in the layer back to their original positions, not just the selected one.

Animation Menu



Animation Menu

Allow Frame Skipping

Normally when playing back an animation, Anime Studio will display each frame one at a time. Depending on the complexity of your animation, the display quality settings, and the speed of your computer, the animation may play back slower than its specified speed. Select this command to force the animation to play back at actual speed. In order to accomplish this, Anime Studio may have to skip some frames to keep up to speed, so the animation will play back at the correct overall speed, but may not appear as smooth. The best way to see the animation

at final speed and quality is of course to use the Export Animation command in the File menu.

Clear Animation From Layer

This command removes all animation from the current layer.

Clear Animation From Document

This command removes all animation from the entire document.

Reset All Layer Channels

Resets all channels in the current layer to their initial values, adding a new keyframe at the current time.

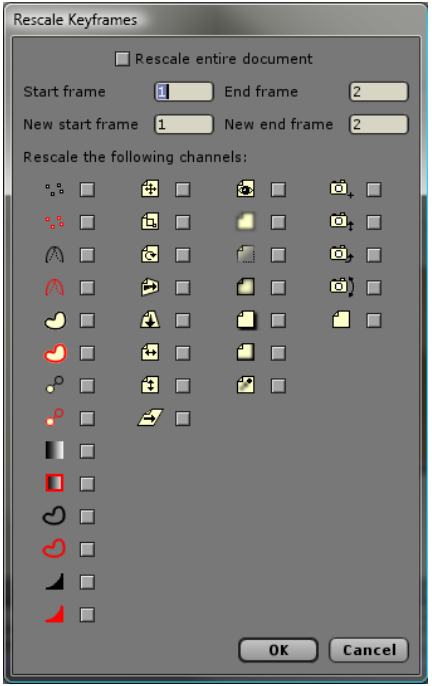
Set Layer Start Time

Select All Keyframes

Selects all the keyframes in the current layer. This is useful if you want to move all the animation in a layer forward or backward.

Rescale Keyframes...

With this command you can rescale a group of keyframes so that a portion of your animation takes more or less time.



The Rescale Keyframes dialog.

Options included in this dialog are:

- ***Rescale entire document***: Check this option to rescale all frames in the document.
- ***Start Frame***: Enter the existing frame number at which to start scaling.
- ***End Frame***: Enter the existing frame number at which to end the scaling.
- ***New Start Frame***: Enter the new target frame number for the start of the scaling.
- ***New End Frame***: Enter the new target frame for the end of the scaling.
- ***Rescale the following channels***: Check or uncheck the channels that you want to include or exclude from the scaling operation. The icons representing the various animation channels are described in the Timeline Window section.

Examples:

- To reduce the amount of time the animation takes (in other words, to speed it up), you could set the start frame (and new start frame) to 30, the end frame to 60, and the new end frame to 45. (45 - 30 = 15, which is half as long as 60 - 30 = 30)
- You can shift a section of your animation by changing the start time. For example, to shift the range of keyframes between 30 and 60, you could set the start frame to 30, the end frame to 60, the new start frame to 90, and the new end frame to 120. The duration will be the same (120 - 90 = 60 - 30), but the animation will take place between frames 90 and 120, instead of 30 and You can

rescale a portion of the entire document by clicking the "Rescale entire document" checkbox.

- To rescale the current layer, select the animation channels that you want to be affected. For example, you may want to rescale the bone animation, but leave the layer rotation alone.

Copy Current Frame...

With this command you can copy values from the current frame in the timeline to any other frame in your animation. For example, if you position some objects in a way that you really like at frame 243, you can use this command to copy that position back to frame 0, to make it the starting position as well.

The Copy Current Frame dialog.

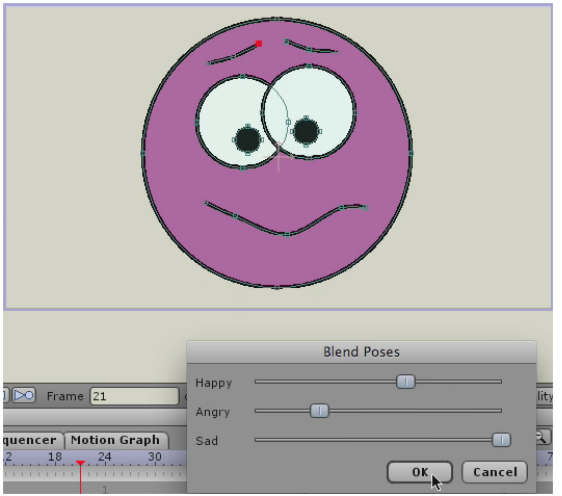
Blend Morphs

You can use the **Animation > Blend Morphs** command to blend poses (or ***morph targets***) together to create a combination pose or morph. This new feature in Anime Studio 6 is very easy to use.

> NOTE: Anime Studio Debut 6 does not allow you to create actions for blending, however you will be able to blend poses contained in content that is created by others. When you first create a character, you'll notice that the **Animation > Blend Poses** command may not be available. This is because you need to use a character that has morph targets that you can use for blending.

To blend your morphs, begin by moving to the frame at which you want the new morph to appear.

Next, choose the **Animation > Blend Morphs** command. The Blend Morphs dialog appears. The sliders in this dialog are named the same as the morphs you created in the Actions window. Adjust the sliders until you get a combination of the morphs that you want to keep. Then click OK to set the new combination.



Use the Blend Morphs dialog to combine your morphs together in any combination of values.

You can then advance to other frames in your timeline, and use the Blend Morphs command to create new combinations throughout the timeline. As you scrub through the timeline, you should then see morphs blend from one to the other.

You can select which animation channels to copy to a new frame, or you can copy everything in the document by selecting the "Copy entire

document" checkbox. There doesn't need to be a keyframe at the current frame in order to copy the current value. This command will copy the current value, whether it is a keyframe or an interpolated in-between value.

An important note about bones: if you position a skeleton system during your animation, and try to copy that pose back to frame 0, the bones themselves will take on that pose at frame 0, but anything bound to the bones (points in vector layers, warped images, other sub-layers) will not take on that pose. This is because frame 0 is a setup frame - bones are set up at frame 0, but they have no influence over other objects at frame 0. If you're trying to copy a pose back to frame 0 in order to set up an initial pose, consider copying it back to frame 1 instead - frame 1 is actually the beginning of the animation, and the bones will influence other objects starting at frame 1.

Track Layer to Video

This command allows you to link a layer to trackings points that have been set up with the video tracking tool. For a complete description of the process, refer to "Video Tracking" on page 140.

Mute Audio

Mutes the soundtrack when playing back your project in Anime Studio, but the soundtrack is still a part of the project. Just un-mute it to hear it again.

Restart Audio Track

Starts the audio track in the selected track over again from the beginning. This allows you to add repeats in the audio track.

Audio Level

Opens a dialog that allows you to enter a numerical value for the audio level.

View Menu

View Menu

Reset

Resets the view of the working area to the starting pan and zoom values. Use this command when you want to jump back to the original view of the project.

Enable Grid

Toggles display of the grid on and off. A checkmark appears beside the command when the grid is displayed.

Grid Settings

Displays the Grid Settings dialog, which allows you to set the number of pixels between each grid space. Default is 20 pixels.

Show Output Only

This command will hide all artwork that lies outside the final output rectangle. This makes it easy to visualize the final staging for your shot. Of course, it's hard to edit what you can't see, so be sure to turn this option off when you need to edit an object that lies outside the visible area of the project.

Window Menu

Window Menu

Tools

Shows/hides the Tools window. The Tools window is shown by default when you start Anime Studio.

Layers

Shows/hides the Layers window. The Layers window is shown by default when you start Anime Studio.

Timeline

Shows/hides the Timeline window. The Timeline window is shown by default when you start Anime Studio.

Style

Shows/hides the Style window. The Style window is shown by default when you start Anime Studio.

Actions

Shows/hides the Actions window. The Actions window is hidden by default when you start Anime Studio.

Help Menu

Help Menu

Help

Opens this document, the Anime Studio User's Manual.

Open Content Library

Opens the Content Library.

Online Tutorials

Opens a web browser with Anime Studio online tutorials. Internet connection will be required.

Welcome Screen

Opens the Welcome Screen.

Register Your Product

Register your product to receive information on updates and upgrades. Internet connection will be required.

About Anime Studio

Displays some information about Anime Studio, including which version of Anime Studio you're running.

About Scripts

Displays some information about all the scripts currently loaded by Anime Studio. All of Anime Studio tools, and all the entries in the Scripts menu are implemented in a scripting language called Lua. Although some programming/scripting experience is required, Anime Studio users are welcome to write their own scripts to extend Anime Studio's built-in features.

Buy Content

Help speed up your animation workflow with ready to use content. Buy content from Content Paradise. Internet connection will be required.

Check For Updates

Check to see if there are any updates for Anime Studio. Internet connection will be required.

Anime Studio Windows

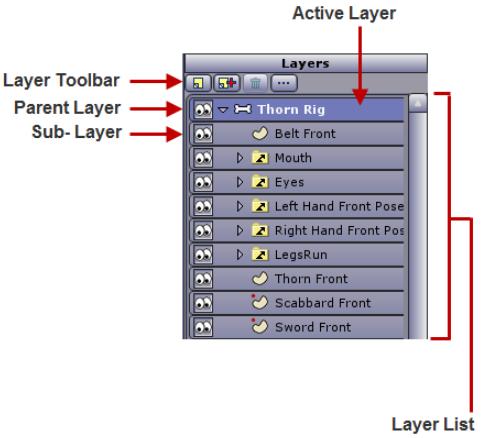
Layers Window

An Anime Studio document is composed of ***layers***, each of which can be independently edited and animated. Layers can be thought of as transparent sheets of plastic. You can draw separately on each of these sheets, and the final picture is the composition of all the sheets stacked on top of one another.

Layers can be added, removed, copied, and re-ordered. The Layers window is where all these operations take place in Anime Studio, and is the topic of this section.

Overview

The Layers window has two sections of interest. As seen below, these consist of the toolbar and the layer list.



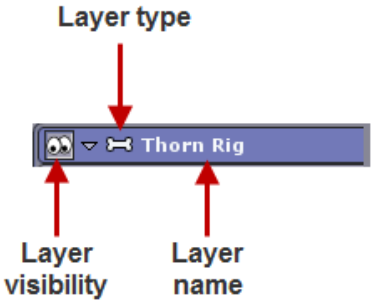
The Layers window.

The Layer List

Most of the Layers window is taken up with the layer list. This is a vertical scrolling list of all the layers in the document. The layers are stacked in order from bottom to top. That is, when the project is displayed, the lowest layer in the list is drawn first, followed by the second from the bottom, and so on up to the top. When two layers contain objects that overlap, this ordering determines which object is in

front and which is behind.

Each layer is represented in the list with an entry that looks something like this:



A single layer in Anime Studio.

Only one layer can be edited at a time in the Anime Studio working area. The layer currently selected for editing (the active layer) is displayed in a highlighted color. To select a different active layer, just click on its entry in the layer list. A layer's entry provides you with three pieces of information: what type of layer it is, its name, and whether the layer is visible.

At the left side of a layer's entry in the list is a visibility control, which controls whether a layer is visible or not. If a pair of eyes is visible in this box, any objects drawn in the layer will appear in the main Anime Studio window, as well as in any rendering of the project. If you click this box, the layer will turn invisible and will not appear in the main Anime Studio window. This can be a convenient way to remove clutter in the main window when you don't need to see all the layers at once. Also, only visible layers will appear when you render a view of the project or export an animation - you can generate test movies much quicker if you turn some layers invisible that don't involve what you're currently working on. Note: the visibility box of the currently active layer behaves differently. The currently active layer is always visible (how could you edit it if it wasn't?), and clicking its visibility box (while holding the **Alt** key) will turn all the other layers at the same level visible or invisible.

To the right of the visibility control is an icon that indicates what type of layer each entry in the layer list is. The different types of layers include vector, image, group, bone, switch, particle, 3D, and note layers.

Certain types of layers act as "groups", and can contain other layers within them. (You can think of them like folders on your hard drive.) These layers have a triangle on their left side. Clicking this triangle opens and closes these group layers, allowing you to access or hide the sub-layers they contain.

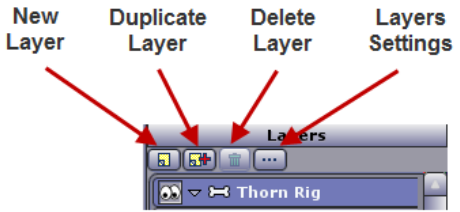
Layers can be re-ordered simply by dragging one layer above or below another layer. Just click and drag the layer you want to move - you will see a red insertion bar indicate where the layer will be placed when you drop it. When the insertion bar appears at the location you choose, just drop the layer and you're done. You can also use this method to drag sub-layers into or out of group layers. Layers can be re-ordered at any time, although their order is not dynamic over time. That is, the layer ordering cannot change in the middle of an animation, for example to make one object appear to move in front of another object.

The last thing you can control in the layer list is the property set of any

layer. By double-clicking a layer in the list, a dialog will appear with various options controlling the appearance and behavior of the layer. This dialog is described in the Layer Settings section below.

Layer Toolbar

At the top of the Layer panel is a toolbar that provides several layer operations. The buttons in the toolbar are described below:



Layer Toolbar

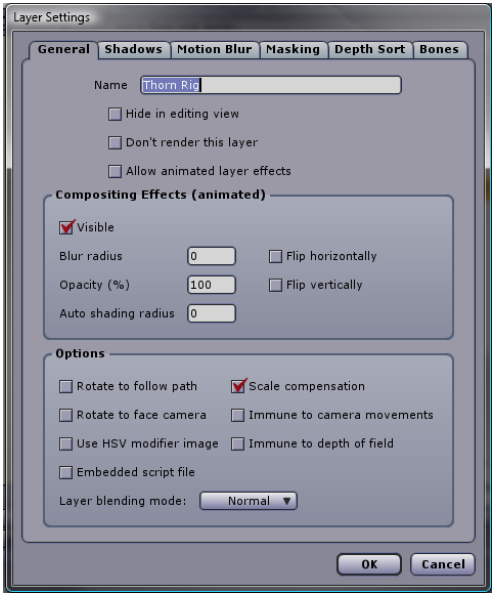
- ***New Layer:*** Adds a new, empty layer to the project. A popup menu allows you to choose the type of layer you want to add. The new layer is placed directly above the current active layer.
- ***Duplicate Layer:*** Makes a copy of the current active layer and adds it to the project. This new copy is placed directly above the current active layer. If you duplicate a group layer, all of the sub-layers inside it will be duplicated also.
- ***Delete Layer:*** Deletes the current active layer. This operation cannot be undone, so you will be asked to verify if this is really what you want to do.
- ***Layer Settings:*** This command brings up a dialog with various controls to modify the layer's appearance and behavior. The next section, Layer Settings, goes into detail about these options. The Layer Settings dialog can also be invoked by double-clicking the current active layer in the layer list.

Layer Settings

The Layer Settings dialog can be invoked either by double-clicking a layer in the layer list, or by selecting a layer, then clicking the Layer Settings button in the layer toolbar. The various controls are grouped into tabs that we'll describe in order.

General Tab

This tab is available for all layer types, and controls general layer properties.



General Layer Settings

- ***Name:*** This field allows you to change the name of the layer. You can type in any name for the layer you want here, and the name will appear in the layer list after you click the OK button. Good names make working with large projects much easier. Examples of layer names might be "Background", "Body", or "Head".

- ***Hide in editing view***: Turn on this checkbox to hide the layer while editing. The layer will still appear in rendered output, but will be invisible in Anime Studio's edit view. This can be useful to reduce clutter and improve performance. Things you might consider hiding in the editing view are background details, texture and detail layers, or special effects like particle layers. Note that if a hidden layer is the currently active layer, it will temporarily un-hide itself so that you can edit whatever it contains.

- ***Don't render this layer***: If this box is turned on, then the layer will not appear in any rendered/exported movies. This option is usually used for some kind of "helper" layer. For example, you might draw a layer with some guide lines to help you draw and animate a scene, but you don't want those guides to appear in the final output. Note layers have this option turned on by default.

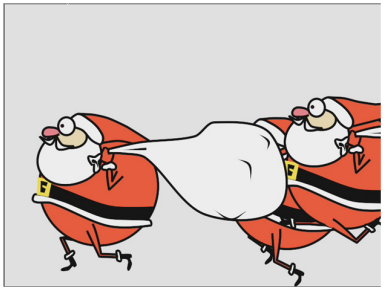
Compositing Effects

This group of controls allow you to change certain layer properties over time. When you modify any of these at a frame greater than 0, you will add a keyframe to the corresponding layer effects channel. For example, if you go to frame 1 and un-check "Visible", then go to frame 20 and re-check Visible, that layer will not appear in the final animation until frame 20.

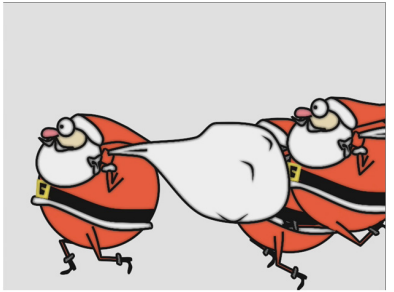
- ***Visible***: Controls whether a layer is visible in the final output. It is important to note that this checkbox is totally independent

of the visibility box displayed in the layer list: ***these are two separate notions of visibility, and don't affect each other at all.*** The visibility control in the layer list is meant for your editing convenience: you can turn one layer off while you work on another. The visibility checkbox in this dialog is meant to allow certain effects during an animation. For example, if you had a layer with a drawing of a glowing lightbulb, you could un-check the visibility of this layer at frame 1, then turn it on at frame 10, off at frame 20, on at frame 30, etc. to create the effect of a blinking light.

- ***Blur radius***: Lets you apply a blur (in pixels) to an entire layer to simulate such effects as camera focus. The blur can be animated over time to make a layer look like its coming in and out of focus.
- ***Opacity***: Allows you to modify the transparency of an entire layer. An opacity value of 100 will not affect the layer at all, while a value of 0 will make it totally transparent. By changing the value from 0 at frame 1 to 100 at frame 10, the layer will seem to gradually appear out of nowhere, which in some cases is more desirable than the type of on/off visibility provided by the "Visible" checkbox.
- ***Auto shading radius***: Allows you to simulate 2D ambient occlusion effects. Double-click the desired layer, or highlight a layer in the layers panel. Turn the Auto Shading option on and set the radius to a value other than zero. A good starting point is somewhere between 8 and 16 pixels.



Without Auto Shading



With Auto Shading

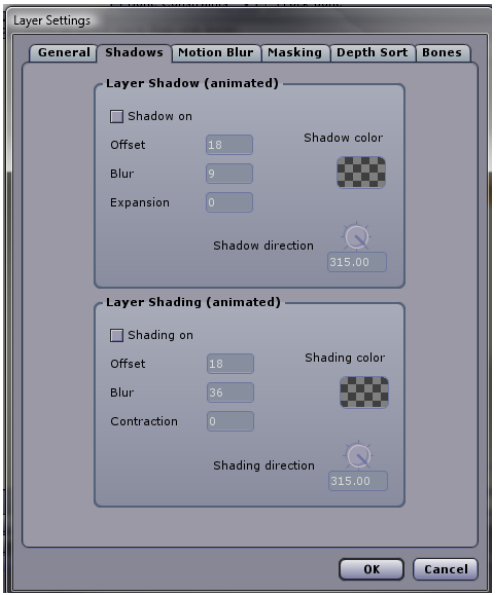
- ***Flip horizontally*** and ***Flip vertically***: Clicking these boxes flips the entire layer in the direction specified. (If the layer is a group layer, then the sub-layers inside it get flipped as well.) This can be convenient in the case where you want to duplicate a layer and have the second copy face the first one as a mirror image.

Options

- ***Rotate to follow path***: When this checkbox is turned on, the layer will automatically rotate to follow its direction of movement. (Specifically, the "up" direction will turn to follow the direction of layer translation.) This can be useful for creating things like flowing arrows that need to point in their direction of movement.
- ***Rotate to face camera***: When this checkbox is turned on, the layer will automatically rotate around its vertical axis so that it always faces the camera. This can be useful when using Anime Studio's 3D camera - especially for scenery-type objects. Trees, for example, that always face the camera can save you a lot of work.
- ***Use HSV modifier image***: This checkbox lets you use an image file to distort the colors of the layer. Sometimes you may want to do this to break up the solid colors in your project and make it look less computerized. The exact behavior of this feature is difficult to explain. The best way to try it out is to use one of the HSV modifier images included with Anime Studio. These images should be pretty close to 50% gray. Other images may produce bizarre, unexpected results. Feel free to experiment - you can always turn off this checkbox if you don't like the results.
- ***Scale compensation***: When this box is checked (as it is by default), and you scale an entire layer larger or smaller, the lines in the final rendered output will automatically get thicker or thinner so that they retain their relative weight in the overall image. Also, layer effects like blurs and shadows will become larger or smaller to match the scale of the layer.
- ***Immune to camera movements***: Sometimes you may want to make some layers ignore camera movements. For example, certain backgrounds or title or logo layers you may want to stay in one place on the screen even while you move the camera around.
- ***Immune to depth of field***: The depth of field function (in the Project Settings dialog) lets you simulate the blurring of objects with different distances from the camera. This option allows you to turn off this effect for any particular layer.
- ***Layer blending mode***: Normally, layers are composited on top of each other simply according to the transparency of each layer. The layer blending mode popup lets you select a different blending mode for each layer. This can be very useful for simulating shading and lighting effects.

Shadows Tab

The controls in this tab allow you to apply automatic shadows and shading to an entire layer.



Shadows Layer Settings

Layer Shadow

This section lets you apply a drop-shadow effect to a layer.

- ***Shadow On***: Checking the "Shadow on" checkbox will make all objects in the layer cast shadows on the layers underneath.
- ***Offset***: Controls how far the shadow appears from the actual objects. A larger offset makes objects appear higher up above the layers below them.
- ***Blur***: Determines how hard or soft the edges of the shadow appear.
- ***Expansion***: Allows you to expand the reach of the shadow. This can be useful for halo-type effects. Try an Offset of 0, Blur of 8, and Expansion of 8.
- ***Shadow Color***: Clicking on the "Shadow color" color swatch lets you change the color of the shadow that is being cast. You can also modify the transparency of the shadow with this control.
- ***Shadow Direction***: Controls the direction the shadow is cast. Just drag the knob in circles to change the direction of the shadow.

Layer Shading

This section is similar to the "Layer Shadow" section above. However, instead of producing a shadow effect ***behind*** the layer, these controls let you apply a shading effect on top of the layer.

- ***Shading On***: Checking the "Shading on" checkbox will make all

objects in the layer appear shaded, giving them a rounded edges effect.

- ***Offset***: Controls how far inside the layer the shading appears. A larger offset makes objects appear to have more "rounded" edges.
- ***Blur***: Determines how hard or soft the edges of the shading appear.
- ***Contraction***: Allows you to pull the shading further into the center of the layer.
- ***Shading Color:*** Clicking on the "Shading color" color swatch lets you change the color of the shading that is applied. You can also modify the transparency of the shading with this control.
- ***Shading Direction***: Controls the direction the shading appears. Just drag the knob in circles to change the direction of the shading.

Motion Blur Tab

The controls in this tab control the motion blur effect for this layer. Motion blur can be turned on and off during the course of an animation.

Motion Blur Layer Settings

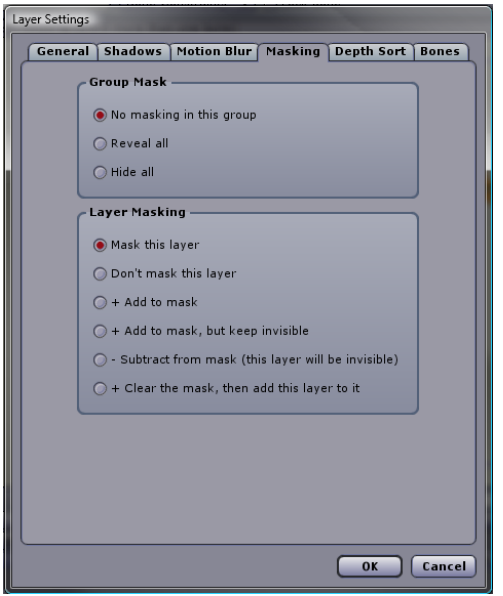
- ***Motion Blur On***: Checking "Motion blur on" turns on the effect. The default settings work pretty well for a basic motion blur

effect.

- ***Frame Count***: Controls how many copies of the layer should trail behind itself. The higher this number, the longer it will take to render your animation. Sometimes a high number may be used for an exaggerated anime or cartoon effect.
- ***Frame Skip***: Controls the separation between blur frames. A larger number will cause the blur effect to trail farther out behind the current position.
- ***Start Opacity*** and ***End Opacity***: Control how the blur fades away behind the layer. Generally, a motion blur effect will fade a bit as it trails behind the layer. For some special effects, however, you may not want the motion blur to fade at all. In those cases, set both values to 100 to keep the motion blur completely opaque.
- ***Blur Radius***: Controls the radius (in pixels) of the motion blur effect.

Masking Tab

This tab is used to control layer masking. Layer masking controls the visible region of a layer - objects in a layer that are not within the visible region of the mask will not appear in the final output.



Masking Layer Settings

If the layer is a group or bone layer, then the following additional options are available: "No masking in this group" means that no masking will occur in this group. "Mask on - reveal all" means that

masking is on, and by default all sub-layers will be fully visible. "Mask on - hide all" means that masking is on, and by default all sub-layers will be invisible (this is the most common option when using layer masking).

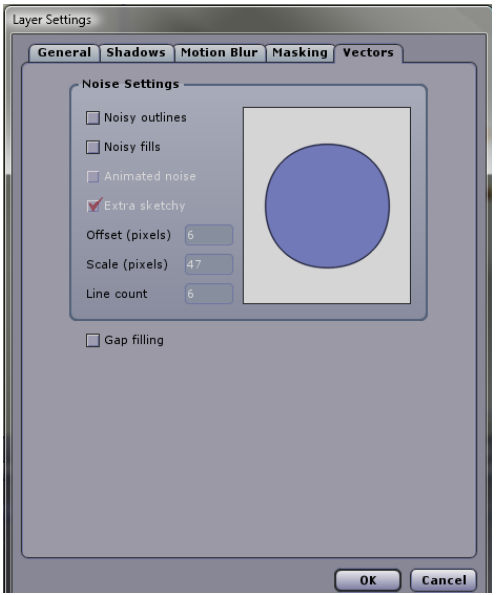
All other layers inside a group will have the following options for layer masking:

- ***Mask this layer***: Clip this layer against the current mask.
- ***Don't mask this layer***: Skip all masking operations for this layer.
- ***+ Add to mask***: Add this layer to the mask. Any higher layers will be visible wherever this layer is visible.
- ***+ Add to mask, but keep invisible***: Add this layer to the mask, but don't show it in the final output.
- ***- Subtract from mask***: Use this layer to cut a hole in the current mask.
- ***+ Clear the mask, then add this layer to it***: This makes the mask identical to the transparency value of the current layer.
- ***Exclude Strokes***: Check this option to exclude outlines from the mask.

The masking controls are simple but powerful options that can be used for all kinds of creative tricks. The best way to explain these is with a hands-on example that you can try out in the Tutorials section.

Vectors Tab

This tab is only available for vector layers, and controls the appearance of lines and fills in the layer. The controls here enable the vector "noise effect". By adding "noise" to a layer, you can make it look more hand-drawn, or at least get rid of some of that pesky computer precision. Of course, that's up to artistic interpretation: if you like computer precision, the noise effect may not be the feature for you.



Vectors Layer Settings

- ***Noisy Outlines*** and ***Noisy Fills***: The first two checkboxes turn on noise for outlines and/or fills. If you turn on both of these, all the shapes in the layer will become distorted. However, if you check only one, the effect will look like someone was coloring but didn't stay in the lines. The circle displayed on the right side shows a preview of what your noise effect settings will do to the final drawing. (The best way to understand this feature is to just start clicking the checkboxes and watch the circle.)
- ***Animated noise:*** Controls whether the noise factor will vary over time in your animation. This can lead to either a very distracting look, or a very sketchy, free-form one, depending on your tastes. Again, experiment with this and watch the circle.
- ***Extra Sketchy***:
- ***Offset***: Determines how far in pixels (on average) your drawing will be distorted from its original shape.
- ***Scale***: Determines the "jaggedness" of the distortion. Larger scale numbers will result in smoother, lumpier distortion, while smaller numbers will give you a more scribbled look.
- ***Line Count***: Tells Anime Studio to draw a number of lines, distorting each in a different way.

Depth Sort

This tab is only available for group and bone layers. Depth Sort has two controls that can be used with Anime Studio's 3D features.

Depth Sort Layer Settings

- ***Sort Layers by Depth:*** Allows sub-layers to move in front of and behind each other during an animation. Normally, layers are drawn in the order they appear in the Layers panel. However, with this option turned on, layers are displayed according to how far they are from the camera. See the Tutorials section for an example of using this feature. Typically, layers are sorted by their depth from the camera, but if you're trying to create a 3D object using multiple Anime Studio layers (like a cube or pyramid), you may want to turn on
- ***Sort by True Distance:*** Tells Anime Studio to sort layers by the distance from the camera to the layers' origins, rather than by depth. Usually this option will be left un-checked.

Image

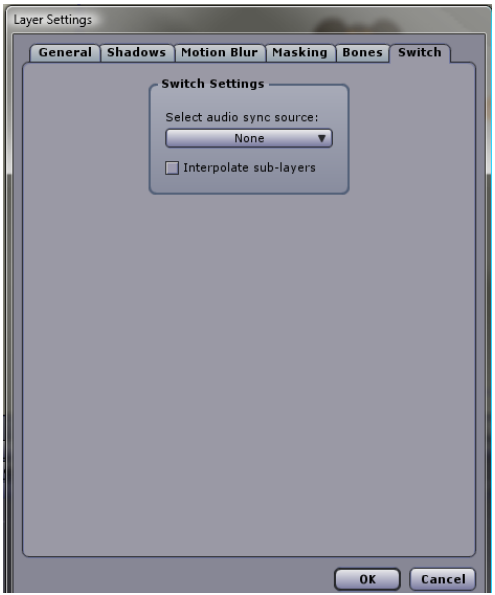
This tab is only available for image layers. There are five options in this tab.

Image Layer Settings

- ***Source Image***: Lets you select the image to be used in the image layer. Use this if you want to change the image, or if it got lost for some reason.
- ***AVI movie has alpha***: Turn this on if the image layer is using an AVI movie, and that movie includes an alpha channel.
- ***Loop movie indefinitely***:
- ***Movie FPS***:
- ***Warp using bones***: If this box is checked and the image layer is placed inside a bone layer, the bones can be used to warp the image as if it were printed on a rubber sheet.

Switch

This tab is only available for switch layers.



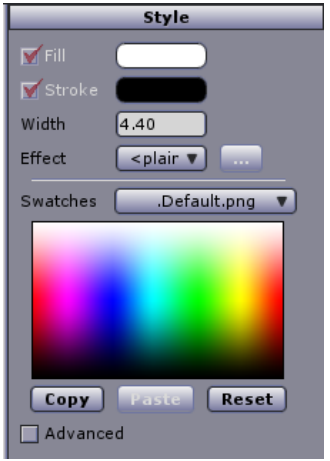
Switch Layer Settings

- ***Select Audio Sync Source***: Lets you select a data file used to control the switch layer. A data file is not required (you can control a Switch layer manually by right-clicking its entry in the Layers window), but if you do want to use a data file you have two choices:
  - You can create a switch data file for lip-syncing using the free program Papagayo.
  - If you want a quicker lip-sync solution, you can use an audio file as a data file. In this case, your switch file should contain several version of a mouth shape, ranging from closed to wide open. The volume of the audio file will control which mouth shape is used at which frame. If you do use an audio file to control the Switch layer, you can either use automatic volume gain (recommended) or set the gain manually. The gain controls how wide the mouth gets. When using manual gain, start with a value of 1 - if the mouth seems too wide, try smaller values (0.75 or 0.5). If the mouth isn't wide enough, try higher gain values (1.5 or 2). See the Tutorials section for an example of using this function.
- ***Interpolate sub-layers***: If this box is checked Anime Studio will do smooth transitions between the sub-layers as long as they're all vector layers and contain the same number of points.

Style Window

The Style window is where you set up colors, line widths, fill effects, and other properties to control the appearance of your vector artwork. The Style window has a lot of controls, but it's not too hard to understand if you break them down into sections:

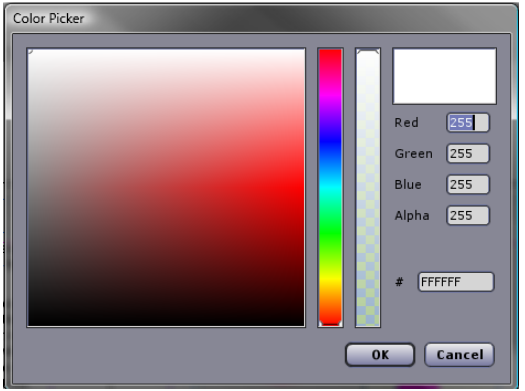
The Style window has two views. With the Advanced option unchecked, the following options appear:



Style window

Fill

These controls allow you to set the appearance of a shape's fill region. First, be sure that "Enable fill" is turned on or off, depending whether you want that shape to be filled or not. Click the fill color rectangle to pick a new color for the fill. A color picker dialog will appear. In addition to the actual color of the fill, you can choose the level of transparency in the color picker dialog.



Anime Studio's color picker.

If a style has been applied to this shape, the style's color will be used instead of the shape's color. Turn on the checkbox to the left of the color swatch to override the style's color.

Below the fill color are two popup menus that allow you to choose one or two fill effects to be applied. These effects include such things as color gradients, spots, and shading effects. Just pick an effect from the menu to apply it to the fill. If you choose two effects, they will be applied in order, one on top of the other. For example, you could choose

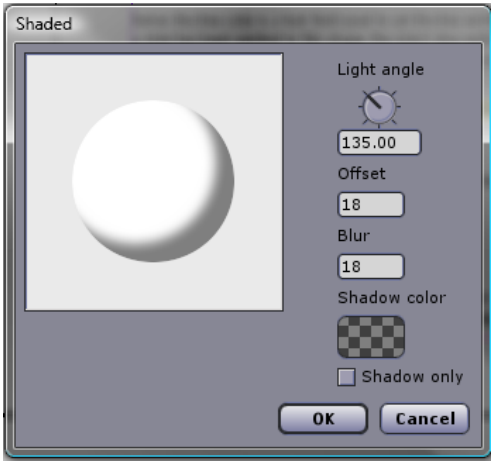
"Gradient" for the first effect and "Spots" for the second effect. The result would be a color gradient for the background of the fill, with spots drawn on top of it.

To the right of the fill effects are buttons that allow you to control the specifics of the fill effect. If a fill effect has been chosen from the popup menu, these buttons will bring up dialogs that are described in the following sections. Some fill and line effects can be animated, with keyframes being added to the timeline when you change colors, blur radius, angles, offsets, blurs, and more.

Shaded Fill Effects

When you choose Shaded Fill effects, a dialog displays the following options:

- ***Light Angle***: Provides a dial that allows you to change the direction that the light is coming from. You can also enter a numerical value. Zero degrees is located at the bottom of the dial.
- ***Offset***: Allows you to assign a value for how far the shadow is offset from the filled area
- ***Blur***: Controls the softness of the shadow.
- ***Shadow Color***: Allows you to choose the shadow color from a color palette.
- ***Shadow Only***: Check this option to only display the shadow, without the object that is used to generate the shadow.

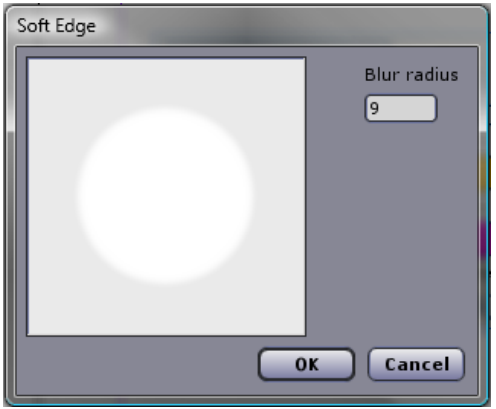


Shaded Fill Options

Soft Edge Fill Effects

When you choose Soft Edge Fill effects, a dialog displays the following options:

- ***Blur Radius***: Allows you to increase or decrease the softness, or blur, around the edge of the fill.

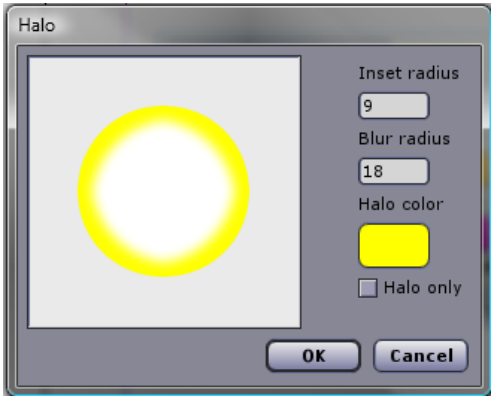


Soft Edge Fill Options

Halo Fill Effects

When you choose Halo Fill effects, a dialog displays the following options:

- ***Onset Radius***: Adjusts the radius of the inner area
- ***Blur Radius***: Adjusts the softness around the halo
- ***Halo Color***: Click the Color chip to select a color for the halo.
- ***Halo Only:*** Check this option to only add the halo effect to the layer.



Halo Fill Options

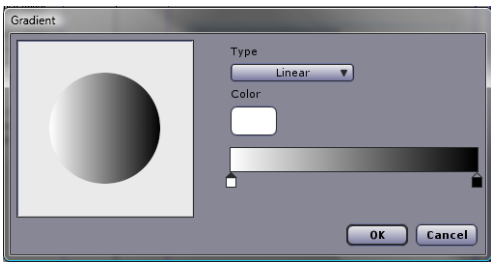
Gradient Fill Effects

Gradient fill effects can be animated and can also respond to bone warping. You can animate the location and color of all of the color markers in the gradient. All changes in color will show up in the timeline when added.

This is the dialog used to control the gradient effect. The following options appear:

- ***Type:*** Allows you to choose one of four types of gradient effects:: Linear, Radial, Reflected, or Angle. The preview shows an example of each type.

Below that are two controls for the colors at each end of the gradient. Finally, a preview area: after modifying the other controls, this region will display a small preview of the effect. You can also add additional colors to the gradient. Select an existing color marker, and press the Alt key while you drag a copy of it to a new location on the gradient bar. Then click the color chip to choose a new color for the marker.



Gradient Fill Options

Image Texture Fill Effects

When you choose Image Texture Fill effects, a dialog displays the following options:

- ***Select Texture***: Click this button to choose an image file to be used as a texture fill.
- ***Tile***: Choose this option if you want the image to repeat more than once to fill the selected area
- ***Don't Repeat***: Choose this option if you do not want to repeat image used for the fill. The image will be rescaled proportionally as needed to fit the width or height of the area that will be filled.

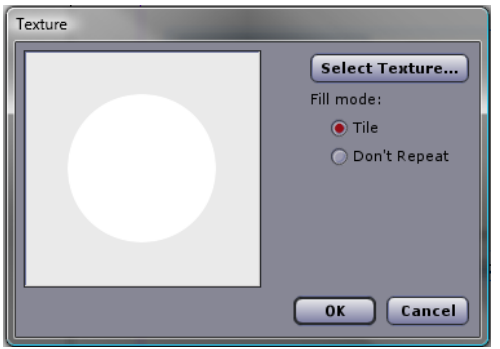


Image Texture Fill Options

Stroke

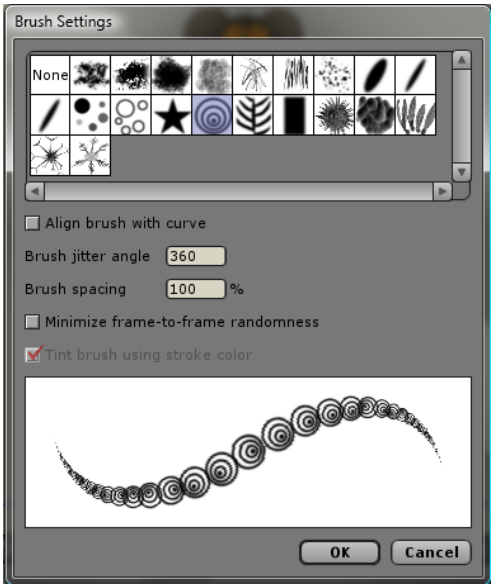
These controls allow you to set the appearance of a shape's outline.

First, be sure that "Stroke" is turned on or off, depending whether you

want that shape to have an outline or not. Click the line color rectangle to pick a new color for the outline. If a style has been applied to this shape, the style's color will be used instead of the shape's color. Turn on the checkbox to the left of the color swatch to override the style's color.

Stroke Options

Below the line color is a text field used to set the line width in pixels. If a style has been applied to this shape, the style's line width will be used instead of the shape's. Turn on the checkbox to the left of the line width to override the style's width setting.



Brush Options

Finally, the last control in the Outline section is a popup menu used to apply a line effect to the shape's outline.

Color Swatches

Finally, at the bottom of the Style window is a color picker. You can use this as a shortcut for selecting colors for your objects. Just click a color in this palette to assign it as the selected shape's fill color. Right-click a color swatch to assign it as the selected shape's outline color.

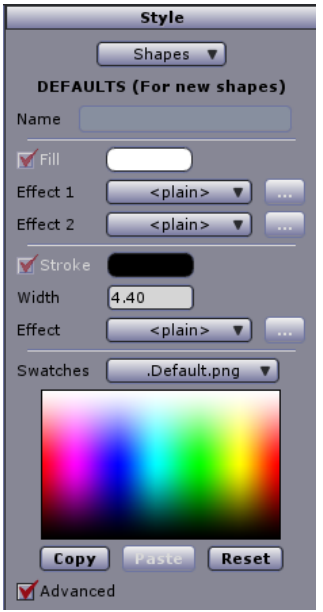
The "Swatches" popup menu lets you select from different sets of color swatches. These color swatches are just image files stored in a folder called "swatches". You can add your own image files to this folder, and they will appear in the Swatches popup menu the next time you start Anime Studio. Or, you can select "Custom Image..." from the popup menu and Anime Studio will prompt you to select an image file to use.

Other

There are three buttons that we've classified as "other" controls. Press "Reset" to switch back to editing the default fill and line properties - if a shape or style is currently selected, it will be de-selected. Press "Copy" to copy the properties of the selected shape or style. Finally, press "Paste" to apply a previously copied set of properties to another shape or style.

Advanced Options

To view the advanced options, check the Advanced option that appears at the bottom of the Style window. The following additional options appear:



Advanced Style Options

Shapes

The Current Shape controls let you select and name shapes and styles. The Shapes popup menu lets you select a shape in the current layer. Only named shapes appear in this menu - to name a shape, simply select it in the editing window and enter a name into the "Name" field.

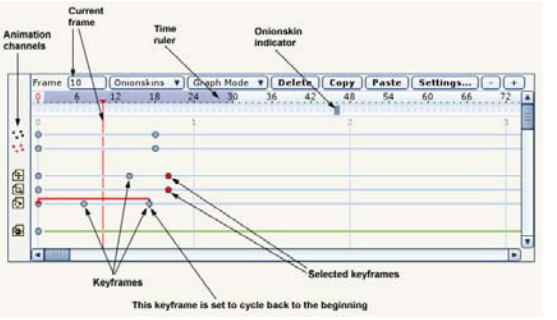
The Style popup menu provides you with a list of all styles in the document. A style is the same set of information used by a shape (color, line width, line brush, effects, etc.), but it doesn't actually appear on its own in your animation. Instead, after creating a style, you can apply that style to one or more shapes. For example, you might create a "Skin" style, and apply it to all the body parts of a character. Later, if you want to change the color of the character, just modify the Skin style, and any shapes that use that style will change instantly. Use the Style popup menu to create new styles and to select a style for editing. The Tutorials section of this manual will walk you through the process of creating and using styles.

Just above the Name field is a text label that indicates the currently-selected shape or style. When no shape or style is selected, this label will say "Defaults" - any changes to fill color, line width, etc. that you make in the style window will be applied to any new shapes you create. When a shape is selected, the label will say "Shape" - any changes you make now will apply to just that one shape. Finally, when a style is selected, the label will say "Style" - any changes you make to a style will not only affect that style, but also any shapes that use that style.

Timeline Window

Overview

The Timeline window is used when animating in Anime Studio to control the current time, and to control objects' keyframes.



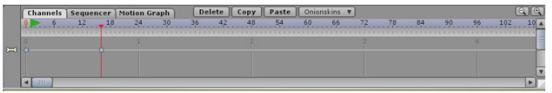
The Anime Studio timeline.

The Timeline window only displays information about the currently active layer in the project. When you switch to a new layer, the timeline panel will update its display to show the new layer's keyframes.

There are several new features in the way that keyframes are displayed. In previous versions of Anime Studio, all keyframe types were displayed in the timeline. For example, you would see keyframe types for bone

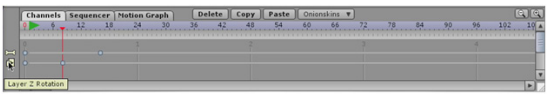
changes, layer translation, layer scale, layer rotation, and color changes whether or not they were actually being used. If you were looking for a particular change, it could be hard to find what you were looking for.

The timeline view is now much simplified. Changes are not displayed in the timeline until you actually create a keyframe change in a channel. For example, you won't see a change in the Bone channel until you actually move a bone.



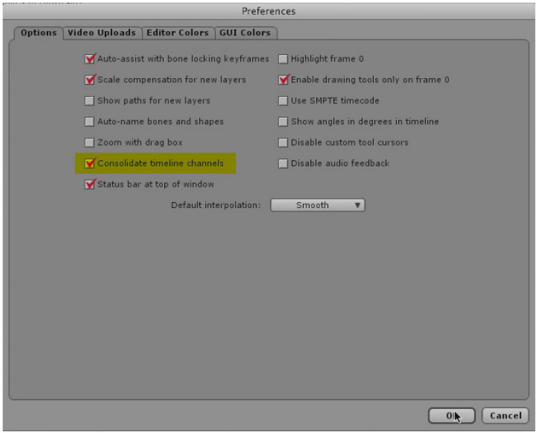
Animation channels are not displayed in the timeline until you add them to your project.

If you then rotate the layer, you'll see the Rotation channel added to the timeline, along with its keyframe.



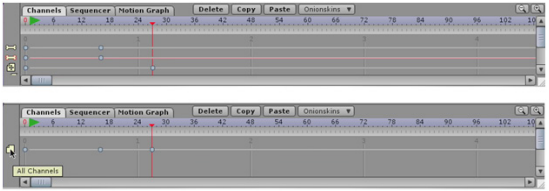
A rotation channel added to the timeline.

There is a Preferences option that allows you to consolidate timeline channels. This option is off by default in Anime Studio Pro 6, and on by default in Anime Studio Debut 6.



Uncheck the Consolidate Timeline Channels option before you delete keyframes.

This option combines all changes on a single layer into one line in the timeline. The following image shows an example of a layer that has several channel changes (top), and what the layer looks like if the Consolidate Timeline Channels option is active (bottom).



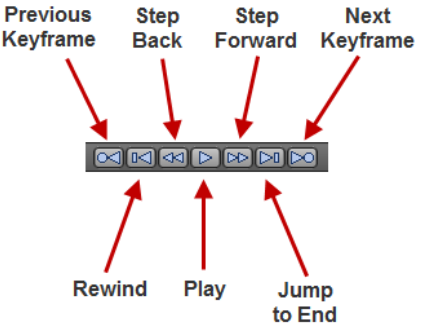
A timeline that is not consolidated (top), and a consolidated timeline (bottom)..

NOTE: The consolidated timeline view displays a keyframe when there is a change in any of the consolidated layers. If you delete a keyframe, you may not be sure which type of keyframe you are deleting , or whether or not there are multiple keyframes being deleted at that point. Be sure to uncheck the Consolidate Timeline Channels option in the Preferences dialog before you remove any keyframes from your timeline.

Controlling Time

The top of the Timeline window has controls for setting the current time. Whenever you modify an object in Anime Studio, the modification is recorded at the current time. The process of modifying an object, changing the time, and modifying it again is how an animation is created in Anime Studio. Time in Anime Studio is expressed in terms of "frames", where there are x number of frames in a second. By default, a new Anime Studio project has 24 frames per second, although this value can be adjusted in the Project Settings dialog.

The first set of controls for adjusting time is a set of VCR-like playback buttons. (These are actually at the bottom of the main window, not in the Timeline window itself.) From left to right these buttons are: rewind, step back, stop, play, step forward, and jump to end.



Playback controls.

Rewind sets the current frame to 0, while jump to end sets the current frame to the last one in the animation (the length of the animation is defined by the shaded area in the time ruler). The step forward and back buttons advance and back up by one frame. The play button plays back the animation in the main editing area, repeating playback in a loop. Finally, the stop button stops playback.

At the top-left of the Timeline window is a text control that indicates the current frame number. You can change the current frame by typing in a

new value here and pressing enter.

Directly below the frame field is a sort of ruler that measures time. This time ruler has small tick marks, one per frame, and has labeled frame numbers at intervals along its length. The time ruler also displays the current frame with a red triangular marker above the current frame's tick mark. The time ruler is used both as an indicator of the current time, as well as a control to adjust it. By clicking (or clicking and dragging) anywhere on the time ruler, you can change the current frame.

A certain range of frames in the time ruler are shaded with a darker color. This shaded region indicates the length of your animation. When you play back your animation in Anime Studio or export it as a movie file, this shaded region is the part that will play back. You can change the start and end frames of your animation in the Project Settings dialog, or you can **Alt**-click in the time ruler to set a new start and/or end time. **Alt**-Click with the left mouse button to set the start of your animation, and **Alt**-click with the right mouse button to set the end.

Next, just below the time ruler, is the onionskin controller. It has tick marks that line up with the frames in the time ruler. By clicking one of these tick marks, you can turn on an "onionskin" frame. An onionskin frame appears as just an outline superimposed on the current frame, and is used to compare your animation at two different times at once. This is helpful for lining up certain complex motions. Click an onionskin marker again to turn it off. If you turn on the "Relative frames" checkbox in the Onionskins popup box, Anime Studio will move the onionskin frames along with the current time so that they maintain the same relative distance from one another. You can also turn on the "Selected layer only" checkbox to tell Anime Studio to display onionskins for just the currently active layer. Anime Studio can display up to 8 onionskin frames.

Playing a Partial Segment

Sometimes, you may want to play back just a short segment of the timeline, instead of your entire animation. For example, you may be working on one small move, and you want to play it back over and over while you make small changes to see when you've got it just right.

To set a limited segment of the timeline for playback, hold down the **Ctrl** key while you click in the time ruler. Click with the left mouse button to set the beginning of the segment, and click with the right mouse button to set the endpoint. To remove the limited playback segment, **Ctrl**-click on the segment endpoints to remove them from the timeline.

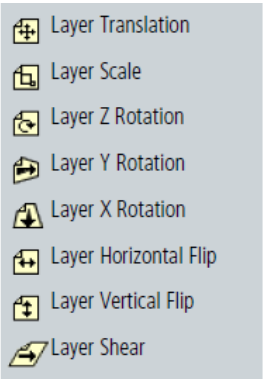
Animation Channels

Most of the timeline panel is taken up with animation channels, drawn as horizontal bars below the time ruler. Each animation channel displays a certain type of motion or effect that can take place in an Anime Studio animation. Different types of layers have different animation channels available. For example, vector layers are the only ones with a point animation channel, and bone layers are the only ones with bone animation channels. At the left end of each animation channel is a small icon that indicates what type of channel it is. Shown below are the icons for the various types of animation channels. Note that the red-colored channel icons represent animation for the currently selected object. (If you're ever unsure about which channel an channel icon refers to, just hold your mouse over it momentarily for a tooltip reminder.)

Note: To help reduce visual clutter, not all animation channels have to

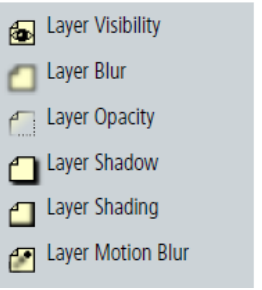
be displayed at once in the timeline. For example, you won't often have to refer to the Layer Shading channel in the timeline. Hidden channels are still doing their work behind the scenes, they just aren't displayed in the timeline.

Layer Motion Channels



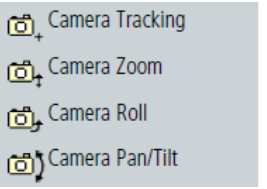
Layer Motion channels.

Layer Effect Channels



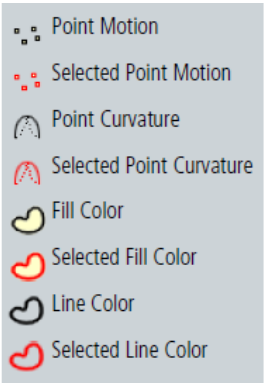
Layer Motion channels.

Camera Channels



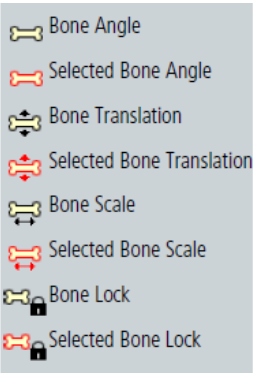
Layer Motion channels.

Vector-Only Channels



Layer Motion channels.

Bone-Only Channels

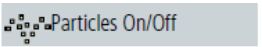


Layer Motion channels.

Switch-Only Channels

Layer Motion channels.

Particle-Only Channels



Layer Motion channels.

Along the length of an animation channel are displayed keyframes. A keyframe represents a point in time at which you, the animator, made a modification to an object. For example, if you set the current time to frame 24, then scale the layer, a keyframe will appear in the layer scale channel at frame 24. Keyframes appear as small markers on the channels. At points in time that lie in between keyframes, Anime Studio automatically calculates how to move an object from one keyframe position to the next.

Working with Keyframes

Keyframes are not just static elements displayed in the animation channels. They can be moved, deleted, and copied. To modify a keyframe, first it must be selected. This is accomplished simply by clicking a keyframe in the timeline panel. A selected keyframe shows up in a highlighted color. Multiple keyframes may be selected by holding the shift key while clicking on keyframes. Alternatively, you can click and drag a rectangular selection box around the group of keyframes you want selected.

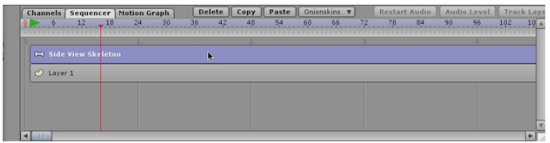
To delete selected keyframe(s), either click the "Delete" button in the timeline, or press the **Alt**+**Backspace** keys. Deleting a keyframe removes motion from an object. Keyframes can also be moved by dragging them forward and back in time. If you want some motion to take less time, drag its keyframe to the left. To take more time, drag it to the right.

As mentioned before, Anime Studio automatically calculates what happens in between keyframes. However, you do have some control over this. By default, Anime Studio will compute a smooth transition from one keyframe to the next - most of the time, this is probably what you want. However, you can change the transition type by right-clicking a keyframe and choosing a new method from the popup menu that appears. The transition methods are: smooth (the default), ease in/out (also a smooth motion, but the object starts off moving kind of slowly and slows down again as it approaches the next keyframe), linear (motion is straight from one keyframe to the next, leading to a somewhat mechanical look to the motion), step (there is no transition at all - the object just jumps from one keyframe to the next), noisy (the object moves in a slightly wobbly motion), and cycle (the value from this keyframe to the next will be taken from some earlier section of the timeline).

Another way of creating keyframes is to copy an object's position from another point in time. To do this, first select the keyframes you want to copy. Next, click "Copy" in the timeline (or press **Alt**+C). Now, set the current frame to when you want the copied keyframe to appear (using the time ruler or the step forward/back buttons). Finally, click "Paste" in the timeline (or press **Alt**+V) to place a copy of the keyframes at the current time.

Sequencer

The sequencer, new to Anime Studio Debut 6 and Anime Studio Pro 6, provides another view of the timeline. It displays each layer as a block of time. Keyframe changes are not displayed in the sequencer, but you can create keyframe changes in this view.

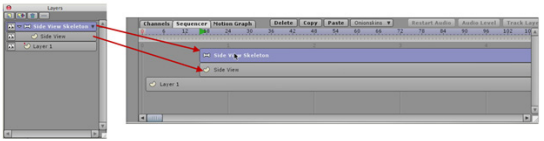


The Sequencer.

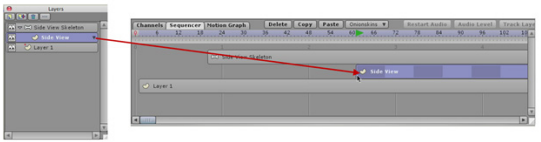
The Sequencer allows you to easily move a layer forward or backward in time. Move the clip toward the left to have it start sooner, or toward the right to have it start later. The green arrow in the time ruler, located at the top of the Sequencer timeline, indicates the frame at which the currently selected clip will start.

NOTE: You can also reposition your clips in the Channels timeline view. Select the channel you want to move, then right-click in the Time Ruler to drag the green arrow to the right or left. You'll notice the keyframes and arrow relocate with the mouse.

For example, you can reposition a layer from frame 1 to frame 38, causing the animation in that layer to start at a later time. To move a layer and its sublayers, click the topmost layer and move all of them at the same time. To move a sublayer, click the desired sublayer to move it on its own.

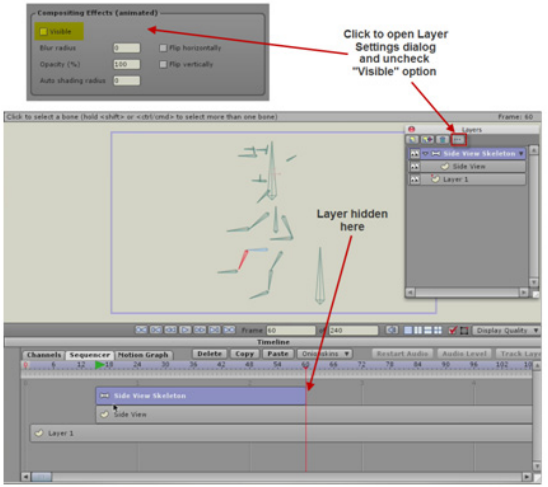


Select a layer to move it and its sublayers.



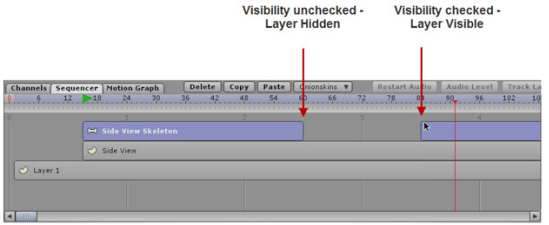
You can also move a sublayer by itself.

You can also use the sequencer to show or hide a layer at any time during the movie. Advance to the frame where you want the layer to become invisible. Open the Layer Settings dialog for the layer that you want to hide, uncheck the Visible checkbox, and close the Layer Settings dialog. The contents in the layer will disappear in the project window, and the track in the sequencer will appear as though it ends at the point where it was hidden.



Check or uncheck the Visible setting in the Layer Settings dialog to show or hide a layer.

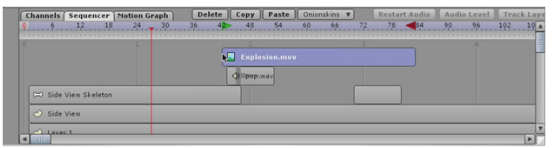
To make the layer reappear later in the timeline, repeat the process. Select the layer you want to unhide, open the Layer Settings dialog, and check the Visible checkbox. After you close the Layer Settings dialog the layer will reappear in the sequencer.



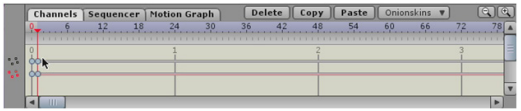
The sequencer shows a break where the layer is hidden.

If you import an audio file, it has a fixed duration in the sequencer. You can see where the sound effect will happen. Say you want a pop to happen when your character disappears from the scene. You can place the pop in the right place.

It works the same way if you import a video layer. For example, if you want an explosion to happen just before the pop, you can import a video layer and place it just before the sound effect.



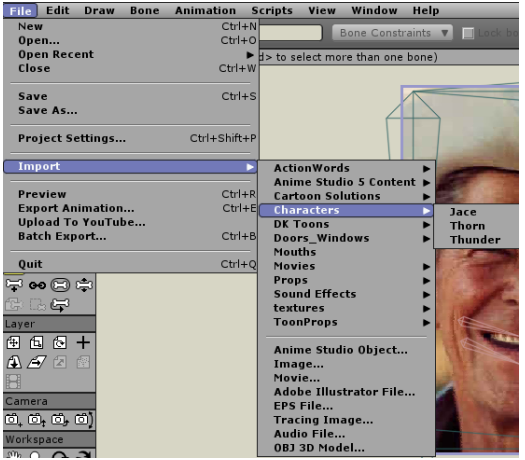
You can precisely place audio and video files in Sequencer view.



Select the Happy morph in the Actions window, and notice a single keyframe in the timeline.

Library Window

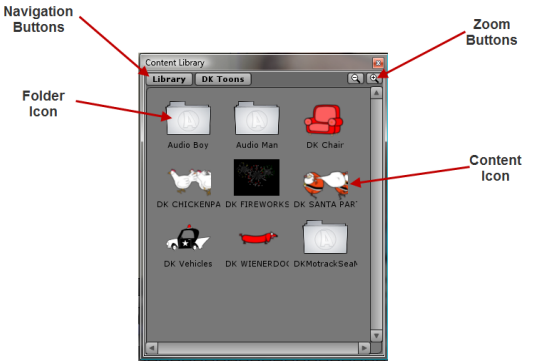
In previous versions of Anime Studio, you could access the library by choosing **Import >** and selecting content from one of the various subcategories. This is the method used in previous versions of Anime Studio.



Selecting content from the File > Import command.

In Anime Studio 6 there two new ways that you can access content in the new library window:

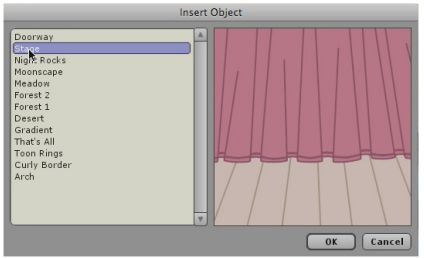
- Choose **Window > Library**
- Click the **Library** button in the top-right corner of the Status bar.



The Library Window.

The Content library opens to display items in your library. Icons display movies, folders, sound files, and other Anime Studio documents in your library.

- Use the zoom tools in the upper right corner of the Content Library window to increase or decrease the size of the icons.
- Double-click a folder icon to open the folder. The contents within that folder will be displayed.
- Double-click a content item to insert it into your project.
- Some content items may come with additional options. For example if you double-click the Backgrounds item, a dialog displays a menu of choices that you can select from. Click a name in the left panel to display a preview in the right. When you find the object you want to use, click OK to insert it into your scene.



Library content with additional options.

The status bar at the top of the Content Library displays buttons that allow you to back up to previous levels.

Use buttons in the top toolbar to navigate backward to previous folder levels.

Appendix

Anime Studio Shortcuts

How to work quickly in Anime Studio

Once you've been using Anime Studio for a while, you'll probably want to find ways to speed up certain operations. Luckily, Anime Studio provides several shortcuts for common operations, such as activating tools, navigating the workspace, and entering data.

Product Comparison

The differences between Anime Studio Standard and Pro

Vector Drawing Features

Feature	Anime Studio	Anime Studio Pro
Text	X	X
Select Points	X	X
Translate Points	X	X
Scale Points	X	X
Rotate Points	X	X
Add Point	X	X
Delete Edge	X	X
Curvature	X	X
Freehand	X	X
Rectangle	X	X
Oval	X	X
Arrow		X
Shear Points X		X
Shear Points Y		X
Perspective Points H		X
Perspective Points V		X
Bend Points H		X
Bend Points V		X
Noise		X
Magnet		X
Snap to Grid		X
Reset Line Width		X
Random Line Width		X

Vector Modifiers

Feature	Anime Studio	Anime Studio Pro
Peak	X	X
Smooth	X	X
Flip Points Horizontally	X	X
Flip Points Vertically	X	X

Fill Features

Feature	Anime Studio	Anime Studio Pro
Select Shape	X	X
Create Shape	X	X
Paint Bucket	X	X
Delete Shape	X	X
Line Width	X	X
Hide Edge	X	X

Fill Modifiers

Feature	Anime Studio	Anime Studio Pro
Lower Shape	X	X
Raise Shape	X	X

Bone Features

Feature	Anime Studio	Anime Studio Pro
Select Bone	X	X
Translate Bone	X	X
Scale Bone	X	X
Rotate Bone	X	X
Add Bone	X	X
Reparent Bone	X	X
Bone Strength	X	X
Manipulate Bones	X	X
Bind Layer	X	X
Bind Points	X	X
Offset Bone	X	X

Layer Features

Feature	Anime Studio	Anime Studio Pro
Set Origin	X	X
Translate Layer	X	X
Scale Layer	X	X

Rotate Layer Z	X	X
Switch Layer	X	X
Rotate Layer X		X
Rotate Layer Y		X
Shear Layer X		X
Shear Layer Y		X
Particle Layer		X

Layer Modifiers

Feature	Anime Studio	Anime Studio Pro
Flip Layer Horizontally	X	X
Flip Layer Vertically	X	X

Layer Types

Feature	Anime Studio	Anime Studio Pro
Vector	X	X
Image	X	X
Bone	X	X
Switch	X	X
Group		X
Particle		X
3D		X
Note		X

Camera Features

Feature	Anime Studio	Anime Studio Pro
Track Camera	X	X
Zoom Camera	X	X
Roll Camera	X	X
Pan/Tilt Camera	X	X

Workspace Features

Feature	Anime Studio	Anime Studio Pro
Pan Workspace	X	X
Zoom Workspace	X	X
Rotate Workspace		X

Orbit Workspace		X

Timeline Features

Feature	Anime Studio	Anime Studio Pro
Keyframes	X	X
Playback Controls	X	X
Animation Channels	X	X
Ruler	X	X
Onionskins		X
Graph Mode		X

Action Features

Feature	Anime Studio	Anime Studio Pro
Store Reusable Animation		X
Edit Reusable Animation		X
Delete Reusable Animation		X

Style Features

Feature	Anime Studio	Anime Studio Pro
Save Style		X
Pattern Brush		X

Preferences

Feature	Anime Studio	Anime Studio Pro
Options	X	X
Editor Colors		X
GUI Colors		X

Project Settings

Feature	Anime Studio	Anime Studio Pro
Save Project Settings	X	X
Edit Dimensions	X	X
Background Color	X	X
Depth of Field		X

3D Camera		X
Stereo Rendering		X
Sort Layers by Depth		X
Sort by True Distance		X
Noise Grain		X
Up to 120 Frames/Second Maximum	X	X
Maximum export size (pixels)	768 x 768	9000 x 9000
Maximum number of frames	3000	Unlimited

Content

Feature	Anime Studio	Anime Studio Pro
Built in Content	X	X
User Samples		X
3D Object		X

Scripts

Feature	Anime Studio	Anime Studio Pro
3D		X

Camera		X
Draw		X
Image Sequences		X
Layer Effects		X
Particle Effects		X
Sound		X
Warp		X
Visibility		X
Script Writing		X

View

Feature	Anime Studio	Anime Studio Pro
Grid		X
Adjust Grid Size		X
Side by Side View		X
Over Under View		X
Four-Way View		X
Display Quality		X
Advanced Current Layer View		X

Import

Feature	Anime Studio	Anime Studio Pro
2D FORMATS		
JPEG	X	X
BMP	X	X
PSD (Layered using Anime Studio Script)	X	X
PNG	X	X
TGA	X	X
EPS, AI, Tracing Image		X
3D FORMATS		
OBJ		X
SOUND FORMATS		
WAV	X	X
AIFF	X	X
MOVIE FORMATS		
MOV	X	X
AVI (WIndows Only)	X	X
MOHO FORMAT		
MOHO File Format	X	X

Export Formats

Feature	Anime Studio	Anime Studio Pro
IMAGE FORMATS		
JPEG		X
BMP		X
PSD (Layered)		X
PNG		X
TGA		X
Batch Image Export		X
MOVIE FORMATS		
SWF	X	X
MOV	X	X
AVI (WIndows Only)	X	X
Sequential JPEG		X
Sequential BMP		X
Sequential PSD		X
Sequential PNG		X
Sequential TGA		X
Batch Movie Export		X
TV FORMATS		

NTSC Format	X	X
PAL	X	X

Technical Support: Where to Go When You Need Help

Online Manual

The first source of help when using Anime Studio is the online manual that you're reading now. If you're just getting started and need some basic tips on how to use Anime Studio, beginning with "Anime Studio Tutorials" on page 10 as a good place to start.

For more in-depth instructions on using Anime Studio, the sections "Using Anime Studio" and "Interface Reference" go into great detail about performing specific tasks in Anime Studio and what all the user interface elements are used for, respectively.

Anime Studio on the Web

Another good source is the Smith Micro web site at http://my.smithmicro.com/tutorials/index.html#anime http://my.smithmicro.com/tutorials/index.html#anime. We plan to keep this updated with questions and answers and new sample files. You can also submit feature requests and bug reports through the web site.

Anime Studio Discussion Forum

Share tips and tricks with other Anime Studio users on the online discussion forum: http://www.lostmarble.com/forum/. Smith Micro staff members also participate in this online group, and are happy to share techniques and answer questions. News about the latest Anime Studio updates is first posted to the online forum.

Email Support

You can also get your questions answered by email. If you have a question, feature request, or would like to report a bug, contact us at cs@smithmicro.com. Please provide us with as much detail about your problem as possible, so that we can understand exactly what's happening and more quickly come up with a solution for you.

Acknowledgements

Some parts of Anime Studio are based on libraries written by third party organizations. Below is a list of libraries used by Anime Studio.

- Anti-Grain Geometry http://www.antigrain.com Copyright © 2002-2004 Maxim Shemanarev (McSeem).
- FreeType http://www.freetype.org Portions of this software are copyright © 1996-2002 The FreeType Project. All rights reserved.
- libjpeg http://www.ijg.org This software is based in part on the work of the Independent JPEG Group. Copyright © 1991-1998, Thomas G. Lane.
- libpng http://www.libpng.org Copyright © 1998, 1999, 2000 Glenn Randers-Pehrson.
- libsndfile http://www.mega-nerd.com/libsndfile/ Copyright © 1999-2005 Erik de Castro Lopo.
- Lua http://www.lua.org Copyright © 2004 Tecgraf, PUC-Rio.
- Ming http://www.libming.org/ Copyright © 2001 Opaque Industries.
- PortAudio http://www.portaudio.com Copyright © 1999-2000 Ross Bencina and Phil Burk
- zlib http://www.zlib.net Copyright © 1995-2002 Jean-loup Gailly and Mark Adler.

Artist Acknowledgements

Smith Micro and Lost Marble would like to thank the following artists for contributing to the content section. To access these files, please start your Anime Studio application and select **File > Import**.

- DK Toons http://www.contentparadise.com/Search.aspx?searchText=DKToons
- Cartoon Solutions http://www.cartoonsolutions.com
- ToonProps http://www.toonprops.com
- Vernon Zehr www.lowrestv.com
- The Smith Micro Content Team

Smith Micro would like to thank the following artists for imagery used in collateral and Promos.

- DK Toons http://www.contentparadise.com/Search.aspx?searchText=DKToons
- Cartoon Solutions http://www.cartoonsolutions.com
- ToonProps http://www.toonprops.com
- Vernon Zehr www.lowrestv.com
- TUI Studios http://www.tuistudios.com
- Freakish kid http://www.freakishkid.com
- Splinter Arts http://www.splinterarts.com

- Bru and Boegie http://www.bruandboegie.co.za

Keyboard Shortcuts

Many tools and features in Anime Studio can be accessed quickly by pressing a single key. These shortcuts make working with Anime Studio much faster than the regular method of moving the mouse to a toolbar and clicking a button, and are worth learning to reduce your drawing and animation time. However, all these features are also available through standard user interface elements (buttons and menus), so learning these shortcuts isn't a requirement to using Anime Studio.

Note: these shortcuts are not the same as "menu shortcuts". Many of Anime Studio's menu commands can be accessed through the keyboard - for example, **Ctrl/Cmd+S** will save the current document. Those types of shortcuts are listed next to the menu item they apply to: just run the program and look at a menu to find the shortcut.

Press the T key to activate the Translate Points tool.

Many of the keyboard shortcuts in Anime Studio are used to activate a tool in a toolbar. If you want to know whether a tool has a shortcut, hold the mouse over the tool, and watch the tooltip that appears. If the tooltip has a single letter at the end (ex: "Translate Points (T)"), then that key can be used as a shortcut to activate the tool. These keyboard shortcuts are not listed here - just look at the tooltips in Anime Studio if you want to learn them.

Some keyboard shortcuts work all the time, and some only apply in while using certain tools in Anime Studio: the sections below lists all the shortcuts and when they can be used.

Common Shortcuts

The following keyboard shortcuts can be used at any time:

- **Escape**: Automatically adjust the view to see everything in the active layer - hold the shift key to zoom in on the currently selected points
- **Home**: Reset the view to see the overall project
- **Enter/Return**: De-select all points
- **Tab**: Select all points that are connected to the current selection
- **Left Arrow**: Step back one frame in the timeline - hold shift to rewind
- **Right Arrow**: Step forward one frame in the timeline - hold shift to advance to end of animation

Working with Vector Layers

- **Delete/Backspace**: Delete the currently selected points
- **Spacebar**: Weld two points together - usually used with the Translate or Add Point tools

Working with Fill Tools

- **Delete/Backspace**: Delete the selected shape
- **Spacebar**: Define a shape based on current selection
- **Up Arrow**: Raise selected shape up one level - hold shift to raise to top
- **Down Arrow**: Lower selected shape down one level - hold shift to lower to bottom

Working with Bone Tools

- **Delete/Backspace**: Delete the selected bone (and any child bones)
- **Spacebar**: Bind points to selected bone
- **Up Arrow**: Select parent of current bone
- **Down Arrow**: Select child of current bone (only works if current bone has just one child)

Working with the Timeline Window

- **Alt/Option+Backspace**: Delete the selected keyframe(s)
- **Alt/Option+C**: Copy the selected keyframe(s)
- **Alt/Option+V**: Paste the previously copied keyframe(s)
- **Spacebar**: Play/stop the animation
- **Page Up**: When in graph mode, zoom in on the timeline - hold shift to move the graph up
- **Page Down**: When in graph mode, zoom out from the timeline - hold shift to move the graph down
- **End**: Auto-zoom the timeline, based on the active animation channel (when in graph mode)

Mouse Shortcuts

There are a few shortcuts that take advantage of the mouse, making work in Anime Studio more convenient once you learn them.

Workspace Navigation

The right mouse button can be used to navigate the main Anime Studio workspace.

- **To pan the workspace**, click and drag with the right mouse button.
- **To zoom the workspace**, hold the shift key while dragging with the right mouse button. You can also zoom the workspace by rolling the mouse wheel back and forth over the workspace.
- **To rotate the workspace**, hold down the control key while dragging with the right mouse button.

Timeline Scrubbing

To scrub the timeline in small increments, hold the mouse over the timeline and roll the mouse wheel back and forth.

Numeric Fields and Angle Knobs

An easy way to make small adjustments in numeric text fields and angle knobs is to hold the mouse over the control and spin the mouse wheel back and forth. Of course, you can still enter values into a text field by typing them, but this method lets you make small adjustments and view the changes immediately.

- On a Windows PC, when using the mouse wheel to modify the value in a text field, holding the **Ctrl** key halves the increment, holding **Shift** doubles the increment.
- On a Macintosh, when using the mouse wheel to modify the value in a text field, holding the **Cmd** key halves the increment, holding **Alt** doubles the increment.

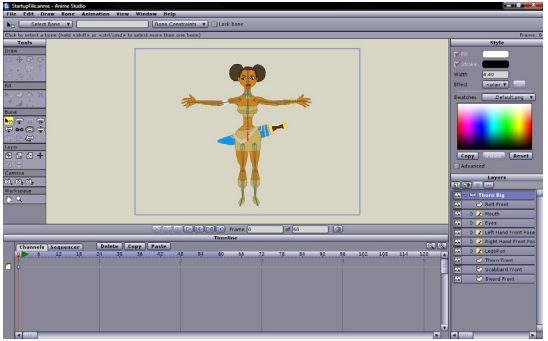
This feature may seem cute but unimportant. However, it's actually very useful when working with the tool info panels in Anime Studio. By using the mouse wheel, you can see your changes take effect immediately. If you enter the number by hand, the change won't take effect until you press tab or enter. An especially helpful place to use this feature is when setting bone angle constraints - these numbers can be tricky to figure out, but spinning the mouse wheel you can see exactly what's happening.

Finally, you can adjust the value of a text field by dragging in it side-to-side with the right mouse button. With a regular mouse, the mouse wheel is probably more convenient, but this feature was added specifically for animators working with tablets. A drawing pen usually has no mouse wheel, so right-dragging allows you to adjust the value of a text field without having to switch back to the keyboard.

Anime Studio's Main Window

Overview

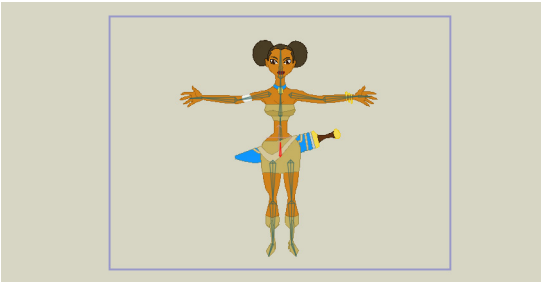
The Anime Studio interface has various windows that are used for controlling different aspects of a Anime Studio project. In this chapter we'll briefly describe some general components of the Anime Studio project window. The more complex parts of the Anime Studio interface, such as the Layers window, have their own chapters that follow this one. Although this chapter will describe how the main window works, it won't go into detail about creating a drawing or animation. For that, please refer to one of the chapters in the section entitled Using Anime Studio.



Anime Studio's interface.

Working Area

Most of the Anime Studio project window is taken up by the working area. This is the region where you will create and view your drawings and animations. In every project, even an empty one, two items will be displayed in this area. The first is a cross marking the center of the currently active layer. The second is a blue rectangle that indicates the visible region of the project. Only objects that are within this rectangle will appear in your final animation.



Working Area.

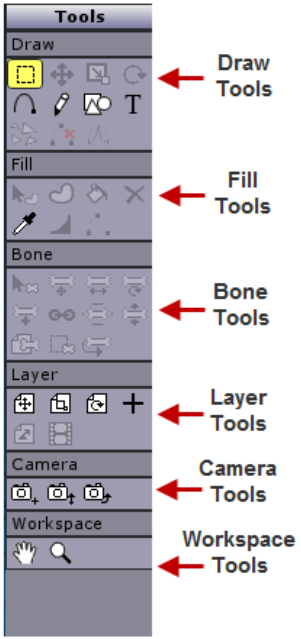
Although every project has a fixed image size (for example 640x480 pixels), the working area is basically an endless flat space on which you can draw and animate. The blue visibility rectangle mentioned above indicates the actual image area for the project. While working, you may want to zoom in or out to see more or less detail in your project. A quick way to do this is by using your right mouse button. By dragging the right mouse button in the working area, you can move around from side to side. If you hold down the shift key while right-dragging, you can zoom in and out. If you want to restore a reasonable overall view in the working area, press the Escape or Home keys, or choose Reset from the View menu (see "View Menu" on page 171).

The background of the working area is usually just a blank color, but if you drag an image file into the working area, it will appear in the visibility rectangle. This is a helpful feature meant to allow you to trace the image with the drawing tools.

The ***real*** work that happens in the working area is not covered here, but is described in chapters starting with "Using Anime Studio" on page 94.

Toolbar

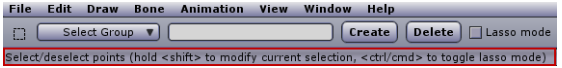
The toolbar to the left of the main Anime Studio window is where you select which tool you want to work with. The available tools will change depending on whether you're currently animating, which objects are selected, and what type of layer is currently active. The purpose and use of each tool is described in "Tool Groups" on page 102.



Anime Studio Tools

Status Bar

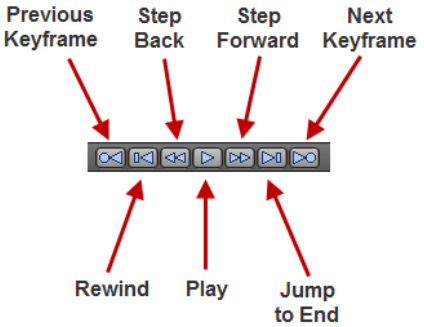
The status bar along the top of the Anime Studio window displays a short description of the currently active tool in the toolbar. If you don't know what a tool does, the best thing is to read this manual. However, if you just need a quick reminder, the status bar can be helpful.


File Edit Draw Bone Animation View Window Help
Select Group
Create
Delete
Lasso mode
Select/deselect points (hold <shift> to modify current selection, <ctrl/cmd> to toggle lasso mode)

Status Bar

Playback Buttons

Near the bottom-left of the main Anime Studio window are a set of playback buttons that allow you to play/stop/rewind/etc. your animation.



Playback controls.